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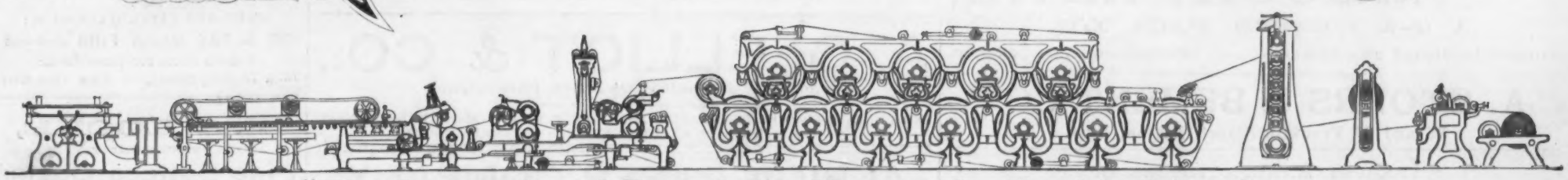
THE PAPER TRADE JOURNAL.



"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIII.—NO. 35. NEW YORK, SEPTEMBER 1, 1894. WHOLE NUMBER 1061.

Trade Topics.

Iron in Mill Construction.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By W. H. Weston.

Iron in various forms is coming to play so extended a part in the construction of all kinds of buildings, and especially in mill and heavy work of various kinds, that it is of the utmost importance to have reliable quality and size used throughout every part of a structure where any load or strain is to come. As to the quality of the wrought or cast iron for such purposes, it is hardly necessary to specify any particular process of manufacture as long as the elements of quality are what they ought to be. All wrought iron which is to be used for forgings should be tough, ductile, and show a uniform fibrous fracture. Iron which shows crystalline spots, and sand, and dirt streaks especially, should be entirely rejected, and all iron to be used should be proved to be of a quality which will weld easily and thoroughly, this last being a point of as much importance to secure as any other, as some irons will show some good elements and yet will not weld properly.

As to the tensile strength of iron for such purposes it of course may be necessary to vary it somewhat; but under ordinary conditions it should be about 50,000 pounds per square inch, and give an elastic limit of at least one-half the tensile strength and an elongation of not less than 20 per cent.

Test pieces should be of ordinary size as to length and cross section. All wrought iron should be capable of being bent while cold 180°, to a curve whose radius is not greater than the thickness of the piece without developing any crack or fracture of any sort. All rivets to be used in trusses or like work of importance should be capable of being bent double while cold, the inner surfaces coming in contact the whole length close up to the bend without developing the least crack at the convex side of the bend. Special care should be taken in selecting round iron for use, that it is of proper quality.

As to the quality of cast iron for mill construction it may vary greatly with the various positions in which it may be used. If in some instances it is to be subjected to tensile and transverse strains the quality should be carefully looked to; but at all events it is safe to be sure and obtain iron free from blow holes and sand and dirt streaks, shrink strains, and whose fracture shows an even grain of uniform gray color, free from spots which are highly crystalline.

All castings which are to show should be cast so as to secure a smooth surface, and should come from the sand sharp and correct to the outline of the pattern. A bar 1 inch square cast from the same heat as that used for the castings, and cast in sand in the same way, should be capable of sustaining on a clear span of 4 feet a central load of 500 pounds.

In all wrought iron work inspection should be provided, so that all heating, forging and welding will be done thoroughly and properly, no matter what the size of the job may be, whether large or small. There are endless numbers of accidents and giving way of iron work simply because the forging or welding was not done as it should have been, and failures which would have been entirely avoided if the work had been done properly are the results.

Joint bolts and tie bolts as used for wooden construction should not only have a high quality of iron in them and their heads thoroughly forged, but the thread should be cut in as good shape as the best bolt machine will cut it, sharply and with a full, even and smooth thread over the whole length cut. The thread in the nuts should be equally as good and so tapped that the nut will be a snug fit on the bolt, and not loose and shaky as they have been in half the work gone by.

Bolt cutters and nut tapping machines have been brought to such perfection at the present time that there is no excuse for using bolts that are not up to the standard. Sometimes bolts used in wood construction are too small for the work. This point should be carefully calculated and all due allowance made, both in the size of the bolt and in the size of the head and washers, in order to secure sufficient hold in the woodwork or whatever timbers they are to hold together.

Dog-irons should be made of ample sized diameter of iron, and in order to be effective must be forged to a sharp angle of 90°, and the holes in the timbers bored so as to give an easy uniform driving fit for the irons. When dog-irons are not made and fitted as above they are of very little value in holding power. Stirrup irons have come into very general use of late years in heavy construction of mills and storehouses where wooden construction is used. These are a valuable and efficient detail. They avoid taking space to pass one timber over another, and by their use the whole system of timbering of a floor can be made to form an even surface both above and below, which is often an item of importance. The use of dog-irons and joint bolts makes a well-braced, compact and strong arrangement of timbering for heavy purposes. Next to using a high quality of iron in them and giving them sufficient width and thickness to stand the load, the welding must be of the best, and the forging so done that they will take an even bearing for their full width on the timbers. No slighting of workmanship should be possible in the making of these irons.

All anchor irons, bolts, &c., which may be required in the various parts of a building should be of the given quality of iron; carefully inspected forgings, castings, base plates and caps of posts, next to being of ample weight, cannot be too carefully made to secure smooth surface and even bearings.

All sharp angles or corners should be entirely avoided, and every inside angle should be rounded instead of being left square, thereby rendering it far less liable to crack and give way under strain. This point even now is not always observed and has led to a good many breakages. Wherever one casting bears upon another, as in the instance of pintles, which take the weight of posts above and transmit it to castings below, the surfaces of the castings should be invariably planed or turned, and both ends of the pintles should be turned off so that they will always set evenly and squarely under load, with no tendency to tip or vibrate, as is the case when put together in the rough.

Shaped iron, Z bars, angles, &c., are valuable in construction and might be employed to a very much greater extent than they are to advantage. The quality of metal in this shaped iron and steel is almost invariably good and the rolling is well done, so that if sufficient size is used they will meet all imposed strains satisfactorily.

There are a great many places in heavy construction where the various shapes can be employed to much advantage and the construction cheapened very materially.

The utmost care should always be taken in making connections with or between I beams, plate girders, channels, Z bars, &c. They should be properly made, and angle irons, rivets, &c., which go to form the connections, should be ample in size and number and of such form as to secure the greatest strength—and this and simplicity are the two points to secure.

Blue Paper Printing.—III.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By James F. Hobart.

Several kinds of paper in the market have the power of giving blue lines on a white ground, direct from the black and white tracing. These papers are known by various names, such as "Cyanoferric," "Gommoferric," "Positive Image," &c., but they are about all the same in composition and work upon the chemical principle that under the influence of light and of citric acid, perchloride of iron will be reduced to the protochloride, and not turn blue when treated to a bath of potassium ferrocyanide, while the parts of the paper which are protected from the action of the light by the dark lines of the drawing are turned blue by the potassium ferrocyanide developer.

To make a blue positive paper make up three solutions as follows:

(1) 6 ounces gum arabic in 30 ounces water.

(2) 4 ounces citrate of iron and ammonia in 8 ounces of water.

(3) 2½ ounces iron perchloride in 5 ounces of water.

These solutions are to be mixed when used, and as the mixture will not keep long after mixing it is evident that the quantities as given are much too large for ordinary work. The three solutions will keep well separately, so that the mixing may be done just before the solutions are to be used, and will be right if mixed in the proportion of (1) 1½ ounces, (2) 8 drams, (3) 5 drams.

Perhaps even one half of these quantities will be sufficient, but as the paper, unlike the ordinary blue paper, will keep indefinitely after it is coated, as long as it is kept away from light and moisture, there is no objection to making up quite a quantity of the paper at one time. This is best effected by placing the sensitized paper in a tube made of zinc, copper or brass.

The paper is printed in the same manner as the ordinary, but this is much more sensitive, and only requires an exposure of a few seconds on a bright, sunny day or a few minutes on a dull day, whereas the ordinary blue print requires ten to twenty minutes on a sunshiny day and several hours' exposure on a cloudy day, and even then as good a print cannot be made as when the sun shines direct.

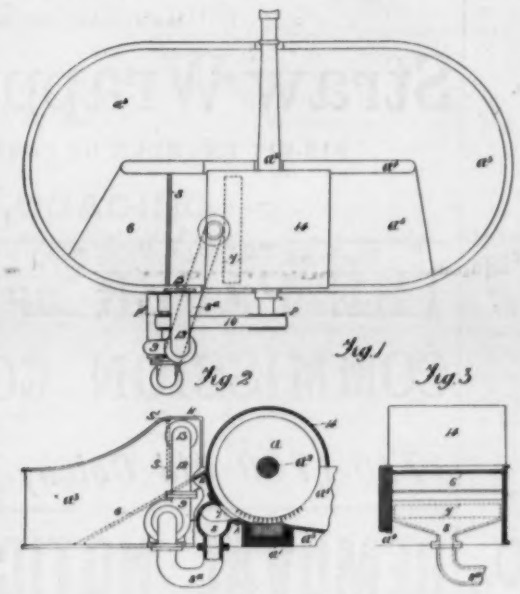
It is necessary to have a test strip of paper exposed under the same kind of paper or cloth as that on which the main drawing is made. The test drawing is merely a series of fine lines ruled on the paper and put into a small printing frame, so that small bits may be torn off as the exposure progresses, and tested by immersing them in the developer. If the exposure has been too short, the lines will be too light; if the exposure has been carried too far, the parts which ought to be white will be streaked with blue.

It is therefore necessary to expose the paper about the right length of time, and while the testing is being done the main drawing should be covered from the sun, that it may not be exposed too much while the testing is going on. The developer consists of a solution of potassium ferrocyanide, made as strong as possible, *i. e.*, a saturated solution. If at any time the developer begins to crystallize it is a sign that a little more water should be added to make up for the loss by evaporation. It will probably require about 1 ounce of the crystals of potassium ferrocyanide to 4 ounces of water, and, as this solution will leave a dark stain on the back of the paper, the latter must be floated on top of the developing solution in the same manner that a sheet of paper is floated for sensitizing.

A sheet of paper can be placed smoothly on top of a liquid by holding the sheet in both hands with the thumb and finger of each; then bend the sheet so that it will touch the liquid diagonally in the middle, after which it may be slowly and steadily lowered on to the surface of the liquid without getting as much as a single drop on the back of the paper.

The development is watched by lifting a corner of the paper. When the lines have become sufficiently dark remove the sheet from the developing bath and float it on a dish of pure water. If the white parts of the paper have become a little stained the color may be removed by immersing the paper in a solution of 3 parts of sulphuric or 8 parts of hydrochloric acid in 100 parts of water. Then the sheet should be well washed in clean water, and adhering spots of blue may be removed with a brush and the paper hung to dry. If any blue spots remain after drying the paper they may be removed by touching them with a weak solution of soda or carbonate of potash. The developer can be used until it is all done. In the next paper the method of making black positives will be described.

(To be continued.)



Beating Engine.

Beating Engine.

This invention relates to improvements applicable to engines of every description in which paper pulp is caused to pass between the roll and plate prior to its delivery on to or over the backfall.

Figure 1 shows a plan view, Fig. 2 being a side elevational view, partly in sectional elevation; Fig. 3 shows an end view.

Referring to the drawings, a is the roll, a' the plate, a^2 the roll spindle, a^3 the vat, a^4 the midfeather, a^5 the frontfall leading to the plate, and 6 is the backfall.

Just clear of the plate on the backfall side is an outlet, 7, in the backfall for the pulp. This outlet is connected to a pipe or conduit, 8, which leads via pipe 8^a to a centrifugal or other pump or elevator, 9, driven by preference by belting, 10, from the roll spindle, P P' being pulleys on the roll and pump spindles to take the belting. The delivery from the pump is then carried upward through pipe 12 to a sufficient height to deliver into the vat at 13.

Fig. 3 shows the form of pipe preferred, the bottom of the pipe sloping from both ends toward the centre, whence the pulp is withdrawn through the pipe 8^a.

It will also be observed that the backfall is carried up more or less parallel with the roll as between A to B so as to form a continuation, as it were, of roll casing 14, or the roll casing may be carried down to the backfall to produce the same effect.

In working therefore the power transmitted to the roll is utilized in grinding or beating the pulp passing between it and the plate, and immediately the pulp has passed the plate it is led away by the suction of the pump or elevator through outlet 7 and pipes 8 8^a to the pump or elevator, whence it is delivered through pipe 12 into the vat at 13. By this arrangement the increased head at which the pulp is delivered into the vat is utilized to effect the swirling or propulsion of the pulp at an increased velocity within the vat, the sides of which may be heightened as shown at H or as found desirable.

A splash board s hinged at s' may be conveniently provided as shown. In this engine described the bars may be arranged equidistant from one another, as the work of propulsion of the pulp is taken away from the roll and is effected as described.

No new design of vat or engine is necessary, as any existing vat and engine can be easily altered to effect these results at a comparatively trifling cost.

In existing "Hollander" engines it will be observed that the only alteration of any importance necessary to put this invention into practice is the cutting of the orifice in the backfall. After this is done the pipe connections may at once be made as described. In engines of the "Umpherston" type the alteration will be of the same nature; the backfall must be cut to form the necessary orifice for the pulp-exit, when the pipe connections between such orifice and the pump, which will be placed outside of the vat, can be made in the ordinary way. The pump will deliver, in the case of an "Umpherston" engine, in the same way as described and illustrated with reference to the "Hollander" engine, and the circulation will proceed in the "Umpherston" engine as before, excepting that the pulp will be withdrawn at the orifice in the backfall and be delivered as described.

Responsibility in Transmission of Messages.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

The question in regard to telegraph companies, which have an exclusive bearing in the direction of responsibility, must naturally be expected to have chief reference to their duty in accurately transmitting messages, the mode of proof, and which party, as between third persons, takes the risk of any want of accuracy in such communications. These points are somewhat considered in a case in Vermont, decided at a comparatively early day, before much had been settled by the courts in regard to them. It was there declared that where a telegram is relied upon to establish a contract it must be proved, as other writings are, by the production of the original. If that is lost it may be proved by a copy, or if that is not obtainable by oral testimony.

It has been held that where the principal portion of the contract is settled by oral communication between the parties, and the telegraph is resorted to for the purpose of settling some incidental matters connected therewith, the contract will be susceptible of proof by oral evidence, and the telegram is to be received as proof of the particulars settled by that means. Questions may arise in regard to what is to be regarded as the original, in communications transmitted by telegraph—whether the written message delivered to the operator at the office from which sent, or the copy of the dispatch delivered by the office at which it was received. This will depend upon which party takes the risk of transmission; in other words, whose agent the telegraph becomes in the transmission.

Where the party sending the message is the responsible party, acting in his own behalf or on behalf of a principal, who desires to send the message to give information which he desires to have acted upon, or to obtain a reply, with a view to initiate a contract, the message delivered at the end of the line is the original. A mere reply, without new conditions, or a message which the party to whom it is sent desires to have

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sent, and consequently takes the risk of transmission, becomes the original when delivered to the operator, and cannot be proved except by itself; but where the papers on which the original messages are written and delivered are not preserved after being entered in the books of the company, the first copy made becomes the best proof of the original.

In a decision in New York it was held that where the parties have agreed that the communications between them shall be by telegraph, this is a warranty by each party that the communications to the other shall be received; and a communication by telegraph is only initiated when it is delivered to the operator; it is completed when it comes to the party for whom it is designed. It is said that the rules of law applied to contracts made by correspondence by mail are not applicable to communications by telegraph, but in the main the same rules will apply. In both cases the party taking the risk of transmission will be the same and the consequences of mistake or failure will ordinarily fall upon the same party in both modes of communication. It is also claimed there is a distinction between the two modes, in that the post office, being a public institution, is not the agent of either party, but is alone responsible for the transmission of letters, while the telegraph is the agent of the party employing it; but both are the agents of the party employing them. and such party is responsible for the safe transmission of messages by either.

This is well illustrated by the transmission of money by mail. If the debtor assumes to send the amount of his debt by mail, without instructions from his creditor to do so, he takes the risk of safe delivery and consequently makes the post office his agent throughout the transit; but if the creditor directs the money to be sent by mail, it becomes his agent for the purpose, and the risk is his, and the debt is paid the moment the money is placed in the post office, whether it ever reaches the creditor or not. Where one employs a special agent, who is not the regular operator, to transmit a message, he takes the responsibility of correct transmission, whether such would have been the case or not if he had employed the usual agencies of telegraphic communications. And where such message had reference to responsibility for the acts of another, the sender will be bound to the extent of what his agent transmits, whether he so intended or not, and a message so sent will be the same as if sent by himself, and will be regarded as a memorandum in writing, under the statute of frauds, to the extent of the words sent.

The general question of the party assuming the responsibility of the transmission of messages is illustrated by some of the cases incidentally, in allowing the party to whom the message is sent to maintain an action for damages, on the ground that he had been misled and thereby suffered loss, where it might have been claimed that if the party sending the message was bound by it, in the form in which it reached the person to whom it was sent, he would have been benefited rather than injured, inasmuch as such message was an order for goods and he would by the error have secured a larger sale than he would otherwise have done. The true distinction in regard to the party entitled to bring the action, where any default in sending a message by a telegraph company arises, must rest upon the distinction which everywhere obtains in actions on the case: 1. That the contracting party may maintain the action against the company on the ground of breach of contract, as well as for any breach of duty as public servants. 2. Those who are injured by their neglect of duty as public servants offering to serve faithfully all who may have any interest or connection with their operations, may have an action on the ground of a virtual wrong in failing to perform this general duty of faithful and careful servants.

Correspondence.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, August 29, 1894.

The absence of that bugbear, the tariff bill, does not wholly relieve the trade. The sins of the past from a commercial standpoint, whatever they may be, have not been atoned for, and it doubtless will be many moons before they are properly obliterated, but with the majority of the business men of the country the paper manufacturers feel somewhat encouraged with the outlook. However, the backward spirit shown during the past year will predominate to an extent for the forthcoming six months, and there is in reality no telling when business will again resume with that serenity of confidence which apparently is disturbed, judging from precedent experiences, every twenty years. Time will tell —'tis a slow but mournful truth.

A greater number of mills are running in this valley and in various sections of the State than have been in operation for a long time. Orders are coming in at a fairly rapid rate and while they are small in the main, they are quite as welcome.

Friends of the ship canal project are greatly indebted to Senator Brice for his aid at a time when the enterprise, in its incipiency came near meeting defeat at the hands of the harbor and river committee. Some misunderstanding existed which was plainly a technicality. It most certainly would have resulted in a lamentable mistake, hazarding the future prosperity of certain parts of the country, but for Mr. Brice, who wrote to the committee setting aside all uncertainties, and the appropriation bill became a law. Had Mr. Brice delayed only a few days longer in his work of interference there would be at present some lively hustling among the Miami Valley and Ohio paper manufacturers in securing a reconsideration of their demands.

By the way, it behooves the friends of this enterprise to exert every possible effort in its behalf, so far as the Miami and Erie Canal route is concerned, as the Pittsburg enthusiasts have not been asleep, but have held several meetings advocating the route leading directly to that city. Engineers and men of practical experience at that end of this great commonwealth are beginning to figure and prepare statistics likewise. Notwithstanding the fact that the Miami and Erie route is considered from all points of view the most advantageous, available and feasible, it should be recalled that the Government surveyors will be paid an equal amount to inspect the respective routes, and while many things may be considered, they should not at all be compelled to report a lack of enthusiasm.

The location for the new plant of the Paper Pulp Coffin Company, organized recently in this Valley, and which received its first nutrition in Dayton, has not yet been selected. It is a fact that several cities have offered premiums or a bonus to the company, but as yet none have been accepted, it is understood. The names of the officiating members of the company have never been given publicity, it is believed. A perusal of the following will satisfy the paper trade men that considerable business acumen and energy underlies the new company: Charles Whealen, of Dayton, is president; Benj. Hey, of Cincinnati, vice-president; Alexander Reed, of Cincinnati, secretary; J. H. Hosbrook, of Cincinnati, treasurer; George E. Shaw, of Cincinnati, manager.

The representative of this firm who is now touring Europe expecting to organize branch companies is meeting with favorable results. This company will be enabled to manufacture "a thousand and one different articles," as a prominent officer remarked, but will most likely confine itself and will direct most of its efforts to the manufacture of coffins. Inasmuch as it will prove impossible for the firm to attend to all branches, certain rights may be disposed of. In any event there will be many branch factories.

E. B. Weston's display of colored papers at the Antwerp Exposition is attracting considerable attention. The Dayton firm is already in receipt of many sample orders, which gives promise of better results ere long. It is conceded that this display is one of the finest and most conspicuous in the foreign exhibits. Albert Bebee, a member of the commission, has assumed personal charge of the Weston Paper Company's exhibit, and judging from his reports the cutters catch the eyes of many merchants. It was noticeable that THE PAPER TRADE JOURNAL's London correspondent took especial notice of the Weston exhibit, although he expressed some disgust at the Exposition in general.

Mr. Weston expects to leave in a week or two and will remain at Antwerp a period of a month or six weeks.

In this connection it should be stated that Mr. Bebee, who is essentially a Daytonian in all his glory, has been highly honored by the King of Belgium in his appointment as a member of the jury of awards. Recently Mr. Bebee dined with the King, and this well deserved honor, no doubt, was gracefully acknowledged. Mr. Bebee's friends recognize that he appears to advantage in the banquet hall, and when he writes that after he had made the acquaintance of the fourteenth waiter he felt as if he was half owner of the palace, no one will dispute him. This distinguished gentleman delivered the opening address on America's Day and was well received. His speech was widely quoted in the foreign papers and the King became very enthusiastic over the loyal sentiments expressed.

Col. Harry Mead was in St. Louis on business last week.

Frank N. Aull, of the Aull Brothers Paper Company, has returned from Lookout Mountain with his wife, who has spent the summer there.

Mr. Baker, of Baker & Foglesong, the lately dissolved oyster bucket firm, has returned from New York.

Henry Hutze, a carpenter employed at the Haldeman Paper Company's plant at Lockland, was caught by falling lumber while at work on the new building and suffered serious injury to his right leg this week.

At Franklin last week all of the mills were running full except the Franklin.

Scarcity of water will in all probability result to the disadvantage of many paper mill owners in this valley, although it is scarcely likely to tie them up seriously. The low water in the various hydraulics in this city, Middletown, Franklin and Hamilton is having its effect and steam is necessarily resorted to as a motive power. Few mills, if any, are dependent upon water power solely.

Per advertisement the three large mills of the Friend & Fox Paper Company were sold at public auction last Saturday. The sales of these finely equipped mills called forth considerable attention from members of the trade, and it was really presumed that at the time of disposal the keen interest evidenced in the past would be apparent in dollars and cents. However, there appear to have been only two active or spirited bidders—J. W. Rawson, a well-known capitalist, interested in the First National Bank, of Cincinnati, being the fortunate purchaser, at a total amount of $87,000. Bradford Shinkle, the other bidder, offered $86,765.58, a sum two-thirds of the appraised value.

These mills are located respectively at Lockland, Crescentville and Rialto, and with machinery, thirteen dwelling houses, 18 acres of land, office building and fixtures at Lockland, warehouse, stock, two canal boats, three horses, harness, carriage, four mules, four wagons, leases and water privileges, comprised of the assets of the firm. D. C. Wolverton, the Wyoming auctioneer, conducted the sale.

Thus terminates the last chapter in the history of a series of business complications arising from partnership difficulties and the appointment of a receiver. This step was taken months ago, when it was discovered that it was the last resource. The Friend & Fox Company was one of the oldest firms in this part of the State, the Rialto mill having been built in 1869, that at Lockland in 1873 and that at Crescentville in 1880. The original owners and builders were Thos. Fox and Col. C. W. Friend, though in late years Mr. Fox, in conjunction with the Friend heirs, has been operating the plant.

There seems little doubt that the mills will again be run in a short time. M. V.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., August 28, 1894.

Trade in this valley seems to show slight signs of improvement, but not yet so marked as could be wished. One prominent manufacturer said to your correspondent to-day that the way business was carried on had changed entirely within the year just passed. No more big orders are received for stock sizes and weights as in the past, but the orders run small, as they come to the jobber, and are for shipment direct. The mills manage to run along on these from day to day, but, the gentleman remarked, business could not be said to be much better until the old basis was returned to. Collections are better and small complaint is now heard on this score. Business on the whole, however, cannot improve very decidedly until the demand for paper becomes enough stronger to compel jobbers to carry something in stock.

The biggest piece of news in the Valley just at present is the effort which is now being made by a representative of an English syndicate to secure options upon the mills here. There have been one or two alleged efforts of this kind before which have come to nothing; but it is claimed by paper manufacturers who have been approached that the present scheme is being set forth in a very specious way, and seems to be a genuine thing. The gentleman who is doing the negotiating is Frank Butterworth, a prominent Chicago man, who bears some very nice letters from bankers in his native city. He is working in the interest of English capital. He was in this valley about two weeks ago to look over the field, and then went to New York, from which place he returned last Saturday night, and is now

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making appointments with paper makers to secure options upon their mills.

As it is told to your correspondent, from the most reliable sources, the plan is to buy up all of the mills in Wisconsin and consolidate them into one gigantic concern. The terms will be one-half cash, and the other half in bonds of the company, secured in blanket form upon all of the mill properties. Mr. Butterworth wishes to complete his work here so that he can go to London and report what he has done by the first of October. He says that it is not proposed that the papers shall be passed, in case the project is carried out, before March 1 of next year. The value of the plants which would be concerned in this deal may be roughly stated at about ten million dollars. As previously remarked, there seems to be a feeling that there is something behind this movement which will entitle it to more respect than has been accorded to the previous efforts referred to.

The mill of the Plover Paper Company, on the Wisconsin River, is making a very excellent record. It has been in operation only about four months, but is already sending paper to both oceans, a carload having been shipped yesterday to California and another is being now made up to go to New York to-morrow. This result is due to the excellence of the paper, which has been its own sales-agent.

The great dam of the Nekoosa Paper Company, on the Wisconsin River, is now completed, and is one of the finest structures of its kind in the State. It gives a 19 foot head of water, and backs the water of the river up for a distance of 4½ miles. The mill itself is now practically ready to go into operation. The pulp mill will probably be started in a very short time—within a week or two—but the paper mill will possibly not go into operation before the last of next month.

Green Bay and Oconto capitalists are interesting themselves in a scheme to create a water power and a town on the Oconto River about 30 miles above the city of Oconto. The river at this point has quite a fall between comparatively narrow banks, and it is proposed to put in a dam at this place which will furnish about 1,500 horse power. Architect C. B. Pride, of this city, is getting out the specifications for the proposed improvement.

It is probable that the suit begun some time ago by the Neenah Water Power Company against users of water in Menasha will come to trial in a short time. The plaintiff claims the right to 65 per cent. of the water flowing out of Lake Winnebago, which is more than Menasha is willing to allow.

The Pulp Wood Supply Company has just removed its office quarters in this city to a more convenient and commodious location.

Public sentiment in regard to the proposed inter-urban railroad has changed, and it is now probable that before a year has passed all of the Fox River cities will be connected by an electric railway.

The Fox River Paper Company, of this city, has just turned out a very exceptionally fine sheet of book paper which is attracting general attention among consumers of paper. It is made of rag stock exclusively and has a remarkably smooth and soft surface.

The John Hoberg toilet paper plant at Kaukauna, which has been closed for several weeks, will resume operations next week.

About 18,000 cords of pulp wood have thus far been shipped into this valley by way of the new docks at Long Tail Point, on Green Bay.

The mill of the Kaukauna Paper Company is at present rushed to its fullest capacity, as in addition to its usual business it is now supplying the paper which is used by the paper bag factory at Batavia, Ill. The Batavia Paper Mill, also owned by the Van Nortwick Brothers, has been in the habit of taking care of the bag factory, but its water power is now so impaired that it is almost helpless and must call upon Kaukauna for assistance.

Jack Henry, an employee of the Pulp Wood Supply Company, at Shawano, had a novel experience last week. While shoving wood to the elevators he fell into the water, where the sharp spikes of the elevator chain caught in his trousers and yanked him up over the elevator and into the car in less time than it takes to tell of it.

E. Harwood, superintendent of the Van Nortwick Paper Company, at Batavia, Ill., has been visiting in this valley for the past two weeks.

E. Buerger, of New York, arrived in the valley yesterday after an absence of a year and a half. He reports that business seems to be picking up somewhat among the paper mills he has visited.

General Manager A. L. Smith, Jr., is expected home shortly from Madison, Me. Mrs. Smith, who has also been in the East, will return with him.

C. B. Pride is making a trip to Eau Claire and Oconto this week.

T. W. Orbison has returned from a trip to the Wisconsin River, where he was called as one of the appraisers in the Consolidated Water Power Company deal.

FOX RIVER.

GREAT BRITAIN.

[FROM OUR REGULAR CORRESPONDENT.]

LONDON, August 22, 1894.

If there is no business—and there isn't much, that's a fact—there is plenty of stir among the big paper houses just at present. First of all, John Dickinson & Co., Limited, are completing their capital of $2,500,000 by an issue of preference shares. This is an historic house, not only because it was established over a hundred years ago, but by reason of the part which its founders played in the invention of the paper machine. Not one iota of credit do I wish to take from Louis Robert, the inventor of the paper making machines, but yet it was only the germ of the modern machine which he brought with him from Essone to England at the beginning of the century. Although the name of Fourdrinier is now more closely connected with the machine I doubt whether the Brothers Fourdrinier, working at Boxmoor, did more to perfect Robert's idea than the Dickinsons at Frogmore, close neighbors in the smiling Hertfordshire valley, where the baby machine was nursed into robust life. Anyhow it was George Dickinson who put the finishing touch on the shake by giving the wires an up and down motion, and that was in 1828. A little later Charles Longman, the publisher, was a partner in the firm of Dickinsons, and they owned seven paper mills—"nine miles of mills," as a writer once put it—all in the valley of the Gade. Now the company works four mills, two only of which contain paper machines. Croxley, with the credit of being the best arranged mill in England, has six; Nash has three. At Apsley and Home Park a lot of minor operations, such as envelope making, are conducted. I understand that the company has placed the preference shares, which it is now issuing without difficulty.

Wiggins, Teape & Co., Limited, seem to be busily engaged in swallowing up all the mills, large and small, which come into the market. I told you in a recent letter of the misfortunes of the Glory Mill, located near Maidenhead, and Wiggins, Teape & Co. have snapped this huge concern up. They have also bought Crabble Mill, near Dover, of which I also spoke lately, but I believe that they intend to use this merely as a material preparer for the Buckland Mills, in the neighborhood, also their property. Besides the mills mentioned they have a machine mill in Lancashire, and a vat mill near Salisbury, so that I am pretty sure they pan out, with their latest acquisitions, as the biggest paper makers in England.

The business of T. B. Ford, Snakeley Mill, Loudwater, Bucks, will henceforth be carried on as a limited company with a capital of $250,000. The wonderful blotting paper of the house took a gold medal at Chicago, you will remember. Thomas Burch Ford died a couple of years ago and his son, Frederick Ford, is a fine young fellow, fresh from Oxford, who possibly does not wish to tie himself down too tightly to business. Hence the formation of a company.

Herbert Spicer, of whom I have spoken in connection with the affairs of the big paper mill built by an English company at Beicos, near Constantinople, has gone to the wall at last. After wobbling in difficulties for a year or so he has failed for $270,000, and his creditors are not likely to see much of their money back. By the by, I understand that a French syndicate is nibbling at the Constantinople mill, which is at present working two machines and making money on its production.

Some figures lately given by the French Custom House "give to reflect," as our neighbors say. The paper trade has been in a deplorable state and is going from bad to worse. France cannot export ordinary sorts and make money on them, and the country has made more paper than it wants for long enough. While the recently imposed tariffs stopped the competition of foreign countries to some extent it is frankly acknowledged that they did more harm than good, because of the reprisals which affected even the small exportation France already had. This was shown in the imports of wood pulp, which fell, in round figures, from 127,000 tons in 1891, to 91,000 tons in 1892. France has in former days had an enormous trade in printing classics and livres de luxe in foreign languages, but she is fast losing it. The total movement of books, import and export, was less by 1,260 tons in 1892 than in the year before in spite of the fact that the import of foreign literature had risen by 215 tons in the same period. Of course this in itself must be a serious thing for the makers. These figures, by the way, may seem antiquated, but the French Custom House is leisurely in its ways and has just issued its report for 1893.

A picturesque fable of the paper trade, which bobs up serenely once a year or so, and raises my dander every time, is out on the warpath once more. Here it is, clipped from a United States paper just to hand: "The enormous amount of wood used for periodical literature every year may be judged from the fact that the *Petit Journal*, which has a circulation of over a million copies a day, and is printed on wood pulp paper, consumes in a twelvemonth 120,000 fir trees of an average height of 60 feet. This is equivalent to the annual thinning of 25,000 acres forest. This enormous amount of wood is required to form the raw material for a single paper! In Sweden, Austria and Germany—the great centres of the production of wood pulp—the question of the destruction of forests is becoming a serious one, so serious indeed that unless some new material comes into use before long the printing paper will eat up the forests of Europe." Now, any way you look at it, this is a grotesque lie. In the first place *Le Petit Journal* used to advertise its circulation at 950,000 at a time when on the calculation of an expert friend of mine it could not print 600,000 a day. Secondly, it is a wee wee little sheet, and even if it had a circulation of 2,000,000 it yet would not use as much paper as the New York *Herald* or the London *Daily Telegraph*. Moreover, the figures are wrong-headed every way you take them. Young wood is the thing the pulp man goes for, and he can cut and come again for the next hundred thousand years at two or three year old trees without making much difference to the vast Scandinavian forests. Mother Nature is building them up again just as fast as he can knock them down.

I wish I had something good to say about trade in general, but I haven't. There is a pretty generally expressed feeling that things have seen their worst though, and most of the mills are working full time. The gentlemen whose business is to stop the mill wash from choking the trout are busy persecuting the paper maker, whose business it is to choke the trout in various parts of the country, and the Paper Makers' Association, whose business it is to choke the gentlemen whose business, &c., has gone quietly off to sleep again. The paper trade of this country do not begin to know how to combine, and that's a fact. The very first thing they did was to invite the press to their first meeting, and the second thing was to bolt the press out. Fatal madness! Now they've gone to sleep, and there is no one to wake them.

ALFA.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, August 30, 1894.

The settlement of the tariff question has removed the uncertainty and doubt so long existing in the public mind, and now the various manufacturing industries are in position to figure on values.

In local trade circles some improvement in business is beginning to show itself, and jobbers are more cheerful than for some time past.

J. Richard Carter, of Carter, Rice & Co., said that business was improving a little and that he felt encouraged at the outlook for fall business.

John Carter, of John Carter & Co., said that orders for paper have been received more numerously of late and that a fair business is now being done in small sized orders. He thought that trade would become more active during the coming month.

The A. Storrs & Bement Company is having better business, and now that the demand for paper has started in the company's "Fine Art Super" is moving quite liberally. This is a special grade of paper for fine printing; it is controlled by the company, and its use is expected to become very extended.

Stone & Forsyth note an increase in business, their printing department being run full time at its full capacity.

Colonel Haskell reports that inquiries have been received more frequently of late from the larger consumers, whom, weeks ago, it was impossible to interest in paper.

The Rice-Kendall Company stated that its doors were open every day for business and such improvement as was developing from week to week was being shared by the house.

Pulsifer, Jordan & Co. have been reporting more activity to trade for some weeks past and they feel that the fall business is going to be good, if no new complications arise to disturb the industrial situation.

The Hollingsworth & Whitney Company also report good business. Its mills are running full time and are turning out a full product, which is being distributed at market prices.

As regards prices, jobbers say that manufacturers are firmer in their views of value than for some time past.

That stand is possibly due to the tone of the paper stock market, which importers say is very firm abroad at advanced quotations.

If water was not so low in New England more mills might be in the market for stock, when the demand would advance the price of paper stock somewhat. Wood pulp would command better prices also.

Water at Fitchburg, Mass., is reported so limited in supply that the mills have not enough to wash stock.

I. R. Ellston has been in town a few days this week. He has located his family in New York, where he will make his business headquarters as the Eastern salesman of the Paper Consumers' Company, formerly the Columbia Straw Paper Company.

M. L. Bassett, of Lowell, was visiting the city trade yesterday. Colonel Parker, associated with Mr. Bassett, under the firm name of Parker & Bassett, has retired from the paper manufacturing business and the mill is now being run by Mr. Bassett under the firm name of M. L. Bassett & Co.

Visiting representatives of the trade were not as numerous as usual the past week, those reported being Daniel F. Emery, Jr., Garrett Schenck and H. G. Fuller, of Rumford Falls, Me.; Russell Jarvis, of Claremont, N. H.; T. E. Barnes, of Plantsville, Conn.; Mr. Keeney, of Manchester, Conn.; Charles S. Barton, Charles Gray and Mr. Williams, of Worcester, Mass.; Sam Rust and Mr. Sturtevant, of Holyoke, Mass.; C. T. Weeks, of Skaneateles Falls, N. Y., and Leon Gottheil, of New York.

Charles A. Dean, of the Hollingsworth & Whitney Company, is located at Moosehead Lake with his family at present, but will return to town on Tuesday next.

Wm. F. McQuillen, of the A. Storrs & Bement Company, is in camp at Five Ponds, Me., ready for partridge shooting, which opens on September 1.

J. B. Forsyth, of Stone & Forsyth, will

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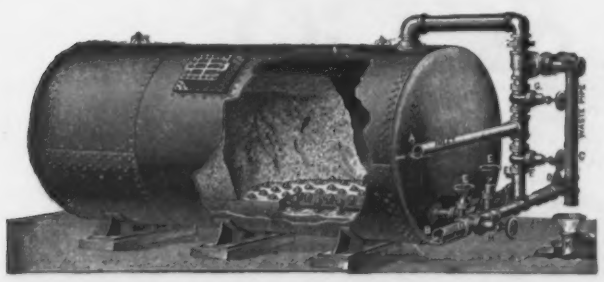

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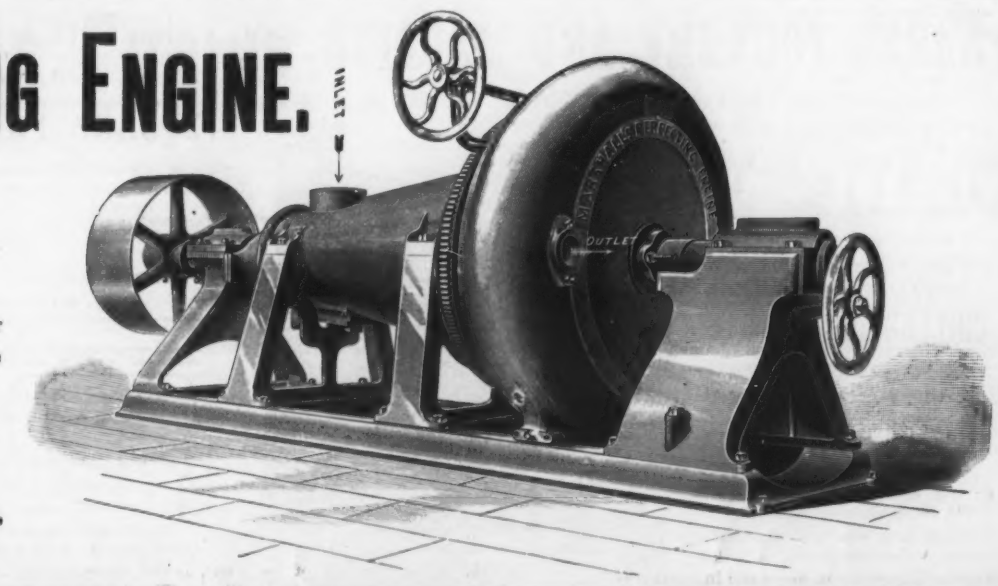

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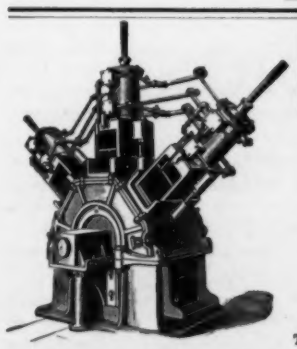

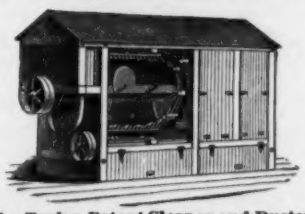

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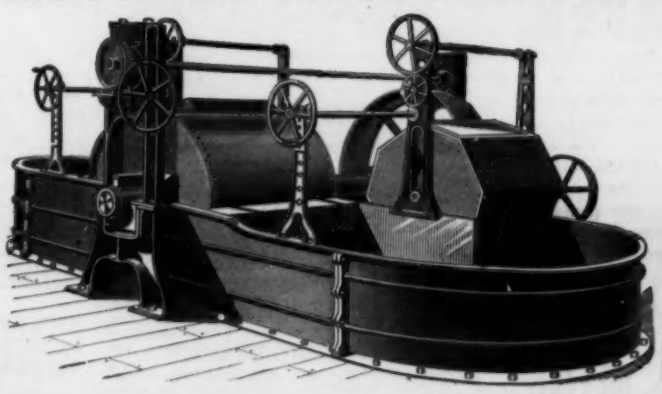

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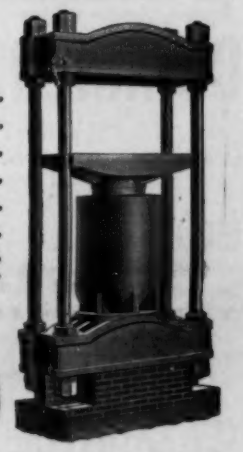

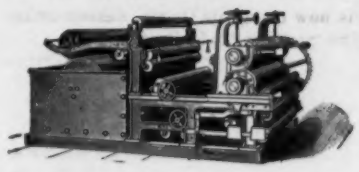

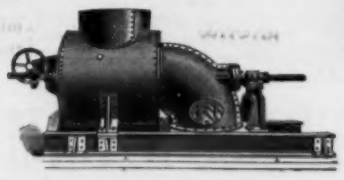

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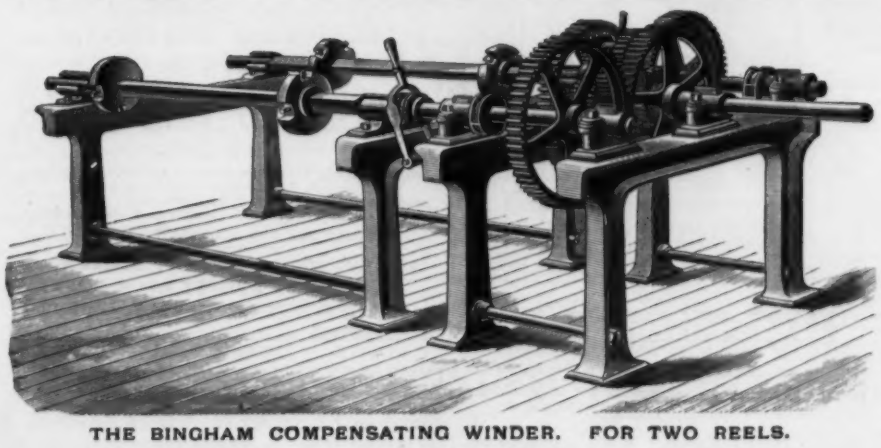

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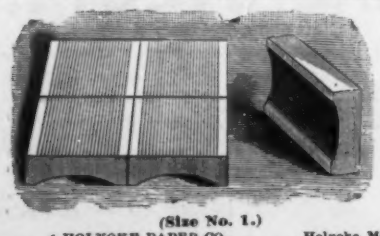

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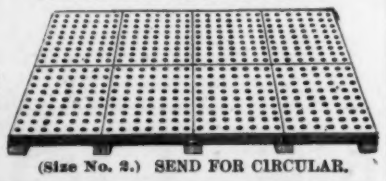

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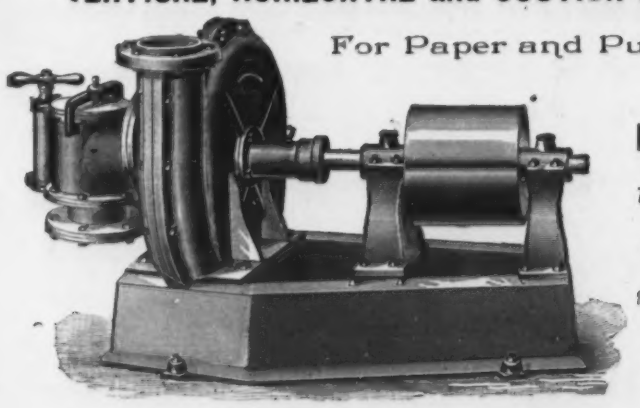

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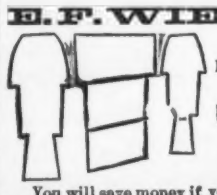

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PART II.

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CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, adansonia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres; growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots; analyses of woods; specific gravities; ash; fuel values; occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Resin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of alumina; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

CHAPTER X.—**Electro-Chemistry,** with reference to bleaching, manufacturing of pulp, manufacturing of chlorine and soda.

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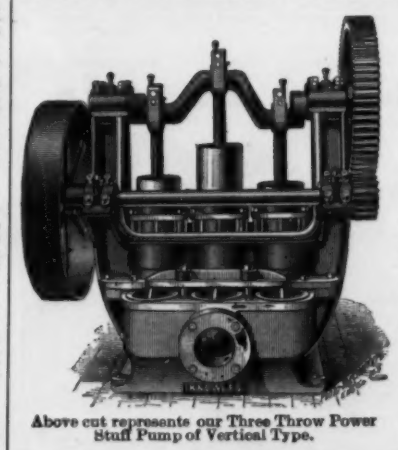

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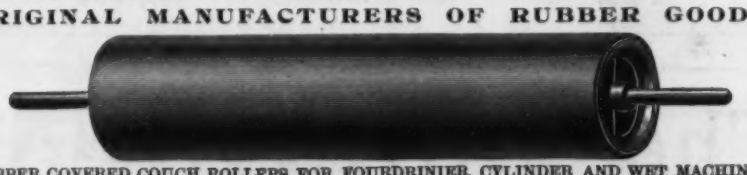

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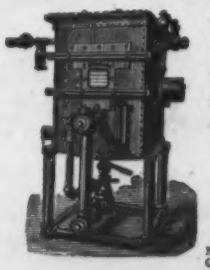

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leave town on Saturday for the camp of the Mastigouche Fishing Club in Canada. L. V. Walkley and F. W. Lienbach will be in the party, and they are planning for a three weeks' trip. When they return they will no doubt tell the "Same Old Story"—S. O. S.

Col. J. P. Jordan, of Pulsifer, Jordan & Co., is being strongly urged to take the nomination for Congress in his district. Col. Jordan, if nominated, would no doubt be elected, but he feels that he ought not neglect his paper business for political honors. Col. Jordan has done good service as a Senator in the Massachusetts' State Senate, and would represent the State in Congress most acceptably to his constituents. His political friends and business associates are not inclined to accept the colonel's declination of the honor to be conferred and will make strong efforts to secure his assent to the nomination.

DELESDERNIER.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., August 30, 1894.

Business as a rule remains unchanged. There are some cases where mills are experiencing quite an improvement in the number of orders received, but, as one manufacturer said this morning, no one can tell how long it may last. The general tone of trade is quiet, and probably will be for the present at least. The book mills are perhaps a trifle better off for orders than makers of fine papers.

Even if business in general picks up this fall the paper trade will not feel the change at once. It is generally the case that this industry is about the last to feel a revival of business.

Stock dealers report that there is a better call for rags, both foreign and domestic, than there has been for weeks, and this would indicate that manufacturers have faith in the expected improvement in business.

Since my last letter the removal of the Purcell Envelope Company from Albany to this city has been definitely settled, and the preliminary work for the inauguration of the plant has begun. The final arrangements were made at Springfield at L. J. Powers' residence between Superintendent Townsend and Mr. Russ on the part of the company and Mr. Powers for the Connecticut River Paper Company early this week.

The plants of the Connecticut River Paper Company and the Powers Paper Company were thoroughly inspected by the visitors, and the facilities were carefully looked into and everything was found satisfactory.

As a result, Holyoke adds another solid manufactory to its already long list of industries, and some 1,500 or 1,800 people will derive a direct benefit from the coming of the Albany concern.

It is probable that by September 10 the business will be ready to start if everything works favorably. A force of men is already busy removing the machinery from the mill to make room for the Purcell Company's machinery, which is fast arriving. The mill building in which the new comers will locate is 250 feet long, 50 feet wide and five stories high, affording a floor space of 50,000 square feet.

To this will be added a building 100 feet long and 50 feet wide, having a floorage of 30,000 square feet, making in all 80,000 square feet of space at the command of the company. The new concern will employ 300 hands and as many more will be needed by the Connecticut River Paper Company to produce the 9 or 10 tons of paper a day needed to make the 2,000,000 or more envelopes required each day.

Thus 600 or more people will have steady employment for four years whatever the condition of business may be. The office of the company has been besieged for a number of days by people needing employment, and the officials say that a very desirable class of help is being secured. The contract for the new building will be awarded in a few days, and the contractor will have to finish it within sixty days after the work is begun.

The officials of the new company say that the greatest pressure was brought to bear on them by Albany people to induce them to remain in that city, one man alone offering to loan the company $10,000 a month as long as needed; but the men most interested could see numerous advantages in locating in this city, the one item of saving in freight being $30,000 a year. Holyoke is as glad to get the industry as its managers are to locate it here.

The low water is causing much trouble for the manufacturers, and there will be no remedy until we have a long rain. The Water Power Company has been obliged to shut the head gates several times this week in order to get water sufficient to run the mills. Meanwhile the people down at Hartford are pitching into us at a great rate for holding back the water, which they also need badly.

Architect Hardy, of the firm of Ashley B. Tower & Co., has just returned from Tupper Lake, in the Adirondack region, where he closed the negotiations for furnishing plans for a new paper mill, which is to be built by the Piercefield Paper and Milling Company. The proposed mill will be located about 6 miles from Tupper Lake and will have six pulp grinders and a similar number of digesters. Three machines will be used for producing paper.

The Parsons Paper Company has decided to erect a handsome building in the rear of the Hotel Hamilton at once. It will be five stories high, the ground floor to be occupied by stores, while the upper stories will be rented for light manufacturing purposes.

The Linden Paper Company started its mill on full time this week as the increase in the number of orders of late warrants such a move.

It is understood that the plans for an enlargement of the George C. Gill Paper Company's mill are being prepared and that the improvements will be most important.

Another building is soon to be erected on Crescent street by the Merrick Lumber Company, which will be occupied as a paper box manufactory. The building will be about 75 feet long, 50 feet wide and four stories high.

The National Brotherhood of Paper Makers will hold its fifth annual convention at Foresters' Hall in this city, beginning Saturday and continuing until Tuesday. Lodges in this city, Lawrence, Fitchburg, Lee and Braintree, Mass.; Bellows Falls, Vt.; Berlin Falls, N. H.; Livermore Falls, Me., Fort Edward, Glens Falls, Palmer Falls, Sandy Hill, Black River, Watertown, N. Y., and Burnside, Conn., will be represented. A banquet will be served on Sunday.

The Holyoke Canoe Club, in which many young manufacturers are interested, will hold its fifth annual regatta near the Sans Souci Club house on Labor Day.

Twenty-five shares of the stock of the Holyoke Water Power Company were sold at Boston recently for 200¼ each. Some surprise has been manifested here that the stock should bring such a figure, all things considered.

Thomas F. Dunford, formerly employed by the Powers Paper Company, but now a shipping clerk for Carter, Rice & Co., of Boston, was married to Mary E. Manning this week. The young people have many friends here, who wish them much joy.

Hon. William Whiting has spent most of the week in New York on business. H.

Wood Pulp Separator.

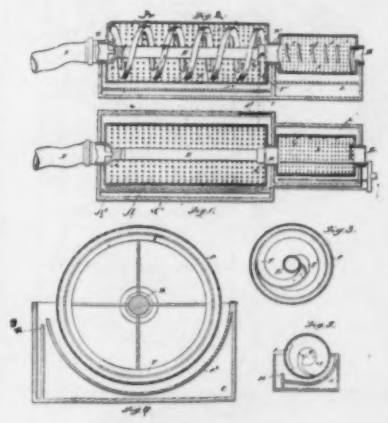
An illustration of an improved separator for wood pulp is given herewith.

Figure 1 is a horizontal section of the machine without the worm; Fig. 2 is a partial vertical sectional view, showing the worm; Fig. 3 is a section of the discharge end of the screen and a dipper attached thereto; Fig. 4 is a sectional view of the separating screen and the trough or casing in which it runs, and Fig. 5 is a similar view of the washing machine.

A is a cylinder, covered preferably with perforated sheet metal and hung upon hollow trunnions, B and B', journaled on the ends of the vat C.

D is an inlet pipe through which the pulp liquor is introduced into the hollow trunnion B, and from thence into the interior of the screen. The screen is revolved by any suitable or convenient means.

E is an axle suspended at either end by means of a spider to the heads of the screen, the spiders being shown at e and e'. The spider at e' has only one opening, into which the dipper hereinafter described enters. To this axle is attached, by means of suitable spokes, a worm F, preferably of angle iron, one flange of the angle iron extending radially from the inner surface of the screen and the other flange extending from the outer edge of the first described, forming



WOOD PULP SEPARATOR.

the outer surface of the worm. This surface is preferably placed at about 1 inch from the periphery of the screen, and is concentric with it. At F' it is formed in the shape of a cycloid and brought to the opening in the spider e', and forms a dipper at the discharge end of the screen, as shown in Fig. 2, by means of which material is brought up and carried out of the screen A into the hollow trunnion B'. The revolution is in such direction that the perpendicular flange of the worm compels inclosed material to travel from the head to the tail of the machine. The horizontal flange of the worm picks up the heavier and coarser particles and slivers and engages them in its angle, from whence they are carried forward by the successive revolutions as they continually drop to the lowest point, until they are ultimately carried out by the dipper through the hollow trunnion B'. The fine material is gently worked through the perforations in the screen into a trough or concave A^3, and which is located an inch or so from but concentric with the screen A.

A ledge or dam is formed upon the interior of the casing at A^3, which holds the water and pulp at the level of its upper edge, but which takes the fine material from off the surface and carries it over into any material passage way for disposing of it. As there will be some fine pulp remaining adhering to the surfaces of the slivers, and also being held in suspension in the water accompanying the slivers, the overflow through the trunnion B' is subjected to a second treatment or washing operation in another screen, shown as directly attached to the trunnion B'. This screen has perforations in its periphery, preferably smaller than in the screen A. It has formed upon its interior surface a series of flanges of the section of a screw, J, J, J, and so disposed that as the screen rotates these flanges are carried down into the pulp held upon its interior and forces it along toward the tail of the machine, where there is a second dipper taking off the coarse material and depositing it out through an axial opening of less diameter than the diameter of the screen at K. This screen also revolves in a vat or trough, L, and the surplus of water with the fine material is carried over a dam, M. A washing device is provided substantially as therein described.

In this device the chief element of its efficiency resides in the concave nature, as shown by cross section of the internal worm, the concavity being directed toward the tail and axis of the machine. This concavity scoops up and carries along with it the coarser particles. It is obvious therefore that it is not necessary to make it exactly in the form of an angle or of angle iron, but that a half of a tube, properly disposed, would answer the purpose.

Paper Pulp Boards in Imitation of Natural Wood.

An improved process of making paper pulp boards or paper in imitation of natural woods can be carried out with any well known paper or wood pulp machine without making any changes or additions thereto.

Let it be supposed that a wood pulp board is to be obtained 30 inches wide, that being the width of the making cylinder, and having a thickness of forty laps or layers of the pulp on the upper press roll, the board being of a length equal to the circumference of the upper press roll, as in all such machines. The pulp is first dyed in the vat by any suitable animal or mineral dyes or pigments of the color of the wood which is to be imitated. The machine is then started, and, for instance, ten laps or layers of the pulp are taken up by the upper press roll. A separate sheet of pulp is then taken and torn in an irregular form, which is, let it be supposed, not more than 15 inches wide at its widest portion and not being longer than the circumference of the upper press roller. Suppose that this separate piece of pulp has a thickness equal to fifteen laps or layers of the pulp on the upper press roll. This separate piece of pulp, which should be either drier than the pulp on the upper press roll, or which should have a greater density than the same, but should not be absolutely dry and hard like a finished board or sheet, is placed on the centre or about on the centre of the pulp which has been wound on the upper press roll and is taken up thereby and wound on the roll with the pulp from the vat, so that the separate piece at its widest portion will be 7½ inches from each side of the pulp on the upper press roll.

It will now be seen that that portion of the pulp on the upper press roll coincident with the separate piece which was introduced thereon is equal to twenty-five laps or layers thereon, whereas, at each side of the separate piece, the pulp on the upper press roll is equal to only ten laps or layers thereon. The greatest pressure is therefore brought to bear on the thickest portion of the piece of pulp and the tendency of the press rolls is to crush the thick portion down so as to make the pulp on the upper press roll of even thickness throughout. This uneven pressure causes the pulp on the upper press roll, and particularly the thick portion of the pulp thereon, to separate and slip, so as to form wrinkles and ridges, which extend through the board. The machine is allowed to operate until the desired thickness of the pulp on the upper press roll is obtained and by such time the effect of the press rolls has been to bring the pulp down to an even thickness throughout.

The pulp is then removed from the upper press roll in the usual way. The board is then dried and may be calendered or not. After the calendering of the board, or after the drying, if the board is not calendered, one or both of its sides is suitably sandpapered so as to efface the wrinkles and ridges which are formed therein, and make the board perfectly smooth. When this is done it will be found that there is left on the board a perfect representation of the grain of wood. After the sandpapering of the board the smooth surface is finished in any suitable way, such as by varnishing and polishing.

The adaptability of this process to paper machines of the Fourdrinier type will be obvious. Ordinarily such machines are used for the manufacture of a continuous strip of paper; but it is a fact well known to paper makers that Fourdrinier machines can be used in substantially the same way as cylinder machines by allowing the pulp to wind convolutionally on one of the press rolls, preferably the first press roll. When this is done the process may be carried out on a Fourdrinier machine in precisely the same way as on a cylinder machine.

In carrying out the process with a cylinder machine, for the imitation of burls and knots, the pulp is colored and is allowed to wind on the upper press roll, as before explained, until the desired number of laps has been formed thereon. Small separate pieces of pulp, having a greater density or being drier than the pulp on the press roll and of a darker color than the pulp on the press roll, and at proper distances apart, are wound up on the upper press roll with the pulp thereon. These small pieces are of irregular shape and may be, for example, from 1 to 3 inches across the widest portion. These small pieces of pulp act in precisely the same way as before explained and in flattening out cause the pulp on the press roller to become wrinkled or rigid directly adjacent to the small pieces. The pulp board is then removed from the upper press roll and is dried or calendered as before and the side closest to the pieces is sandpapered as before.

This sandpapering process is carried on until the small separate pieces of pulp show on the outside, and these, being of a darker color than the base of the sheet, will show up in irregular lines in close imitation of burls or knots. The board is then finished by varnishing or polishing in the usual way. The introduction of these small separate pieces to the pulp on the cylinder machine may be carried on with or without the separate piece before explained for the imitation of the grain of wood, and it will also be understood that when only the grain of wood is to be imitated the single irregular piece which is allowed to wind up on the press roll may be colored to a darker color than the wood, similar to the small separate pieces which are wound thereon when burls and knots are to be imitated.

The popular standards of the purity of water are clearness, tastelessness and colorlessness, and yet they are in reality less desirable qualities than are softness, freedom from putrescible organic matter, and stability in storage. For instance, a colorless and perfectly clear ground water, especially when high in nitrates, will, if confined in open reservoir, promote and support a more vigorous growth of organisms and may become fouled and polluted to a much greater extent than will many surface waters similarly confined and either deeply colored by dissolved vegetable matter, or loaded with clay and sand in suspension. Likewise, a water meeting the requirements of the popular standard, but containing much lime and magnesia, particularly in the form of sulphates, is unfit for use in boilers and houses, while a ground water containing peroxide of iron will cause much trouble and annoyance by the deposits of iron rust in the distribution pipes, and will prove very unsatisfactory in washing and in cooking.—*Literary Digest.*

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Gentlemen—Previous to purchasing a Sulphite Digester with your lining our superintendent, Mr. Duncan, and myself had looked into a good many kinds of linings for Digesters, and after a very careful and thorough inquiry and investigation we decided that it would be for the best interests of our company to adopt your lining for the large Digester for which we have just contracted.

Yours truly,

THOMAS DUNCAN, Treasurer.

Belt Shippers.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Sanford E. Thompson.

A belt shipper is one of the details of a mill to which little attention is paid. If a shipper is wanted on a certain belt one of the millwrights is usually told to put it up, and he does it to suit himself. Of course this may run all right; but I think that anyone who has had much experience around running machinery will remember more than one case where either the shipper had to be rebuilt or else, if allowed to remain, was continually giving trouble.

The millwright or engineer should design each shipper to suit the particular belt with which it is to be used, and it should be built in such a way that it will not be heard from after it is once in place. There are certain principles which should be followed and certain points which should receive special attention. In some mills tight and loose pulleys are to some extent replacing the friction clutch. With the right kind of a belt shipper, there is no trouble in shifting belts as wide as 48 inches, though it is inadvisable to run such heavy belts on a loose pulley for any length of time. For very wide belts, the best shipper is made with rollers, so arranged that they can be dropped flat upon the belt, but at such angles with its line of motion as to throw it toward one side or the other. Belts up to at least 20 inches in width may be shifted with a shipper having rolls placed at oblique angles with the rest of the frame, instead of forks. These and the roller shippers mentioned above will be considered more in detail below.

We will first consider the ordinary forked shipper such as is used on narrower belts, and which is usually built with less care than shippers used on wider and more important belts. Most of the dealers in shafting material carry a line of belt shippers, but in general the device must be built to suit the location in which it is to work, and must be designed on the spot. The shipper, and this rule applies to all styles, should be placed as near to the tight and loose pulleys as possible, and on the strand of the belt running toward these pulleys. As the loose pulley is nearly always placed on the driven shaft, this will bring the shipper on the slack strand of the belt.

One of the first principles to be observed in erecting a belt shipper is that it shall be built so that no part need touch the belt except when the latter is being shifted. It is usually most convenient when building to run the sliding bar through the belt, that is, underneath the strand which is to be moved. This bar must be far enough from the belt so that the latter will not drag upon it when it becomes slack. It is usually desirable to run a belt as loose as it will drive the load without slipping, and it is very annoying to be obliged to take up a belt before it gives any signs of slipping, merely because it drags on the shipper.

The forks should be placed far enough apart so that the belt will not strike them in its ordinary running. If the pulley is wider than the belt, the forks should be at least as far apart as the width of the pulley, while if the belt is of the same width as the pulley, the distance between them should be a little greater. For a narrow belt the forks may sometimes be made of wood, but this is liable to wear and to have grooves cut in it by the belt. A neater arrangement is to use round iron. This should be cut of a suitable length, and each piece should be threaded far enough at one end to run on two nuts, one to be placed on each side of the bar, in order to hold it firmly. Flat iron may sometimes be used instead of round, but it should be bent or rounded so that no sharp edge can possibly come in contact with the belt. The forks should be made sufficiently long to prevent any danger of the belt jumping over them. The edge of the belt will often be bent up when shifting, and if the lever or handle is moved too quickly it is liable to run up the fork and over it. This is most apt to occur after the belt becomes slack.

There should be stops so located that the shipper cannot carry the belt too far, and there should also be some means of holding the slide in place. A pin of iron or wood is often used for this, and answers the purpose very well; but if one is in a hurry it is troublesome to be obliged to stop and put the pin in place. In a paper recently read before the American Society of Mechanical Engineers a plan for effecting this was described in substance as follows: In the sliding bar are cut two V-shaped notches of the same width at the top as the face of the tight and loose pulley. In another bar a male V is cut, which is pressed into the notches by a light spring. When the belt is on the loose pulley the male V will exactly fit into one of the notches, and when the belt is on the tight pulley into the other notch. The notch should be deep enough and the spring strong enough to prevent the sliding bar from remaining at any point except that which will bring the belt on the centre of one of the two pulleys. On the other hand, they should be made so as to allow for easy working. Figure 1 shows the general principle of a shipper made with this attachment.

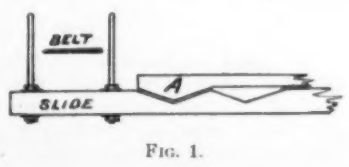

Fig. 1.

Suppose that the belt is horizontal; the bar A is stationary except for an up and down motion when the slide is moved laterally for the purpose of shifting the belt. It may be hinged at the right (not shown in sketch), and have an iron spring to regulate its pressure upon the slide; or the bar itself may be fixed at its right hand end, and may be of the right thickness to give the required flexibility.

For narrow, slow-running belts a shipper may sometimes be used consisting of a bar a little more than twice the width of the belt. This is suspended on a pivot directly above the belt, if the latter is horizontal, and only a few inches from it. The pivot is in line with the edges of the pulleys which come together—that is, it is exactly over the centre of the belt when the latter is half on one pulley and half on the other. To each end of the bar cords are fastened, which hang down on each side of the belt for handles. When it is desired to shift the belt the cord nearest the belt in its then position is pulled to incline the bar. One end is brought against the edge of the belt, thus pressing it over upon the other pulley. When the belt has passed on to the other pulley the bar is nearly vertical, but will resume its original horizontal position on letting go the cord. To shift the belt in the other direction, the other cord is pulled in a similar manner. When this shipper is used the cords should always be arranged so that there shall be no possibility of their getting into the pulleys. Fig. 2 presents a sketch of a shipper made as described.

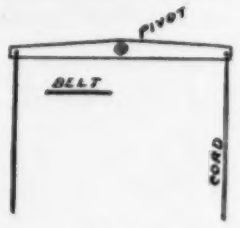

Fig. 2.

For wider belts, up to 20 or perhaps 24 inches in width, a good shipper may be made with two rolls set in a sliding frame which passes both above and below the belt. The rolls are set at an angle of from 20° to 30° with each other, thus making angles with a perpendicular dropped from the belt of from 10° to 15° each. They are placed far enough apart to clear the belt in whatever position it may be These rolls should be long enough to allow for any sagging of the belt when it becomes loose, and also to allow for the bending down of the edge of the belt when shipping. Iron is a better material than wood for the rolls, and for wide, fast running belts the latter are preferably as much as 4 or 6 inches in diameter; but if they are of iron they should be as light as possible with a shaft of small diameter. For horizontal belts, where the rolls are nearly vertical, there should be a step bearing at the lower end so that they will revolve easily. In shifting the belt, its edge will be bent by the roll so that a portion of its outside surface will come against it, instead of its wearing entirely on the edge. This pressure on one side of the belt will also help in shifting it, provided the rolls incline toward each other in such a way that the outside surface, and not the pulley side of the belt comes in contact with the roll.

Fig. 3 is a sketch of a belt shipper similar to one in use on a 20 inch rubber belt, which runs at a speed of about 4,500 feet per minute. The belt has an idler upon it for

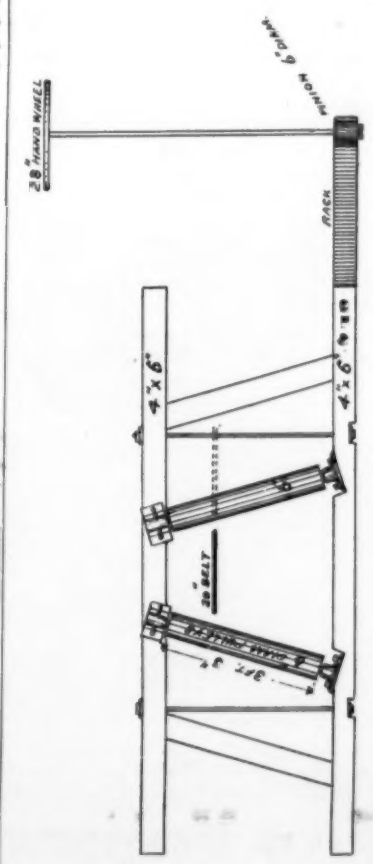

Fig. 3.

a belt tightener, and the rolls are made long so that they will operate as well after the belt has stretched and the idler is pressed hard down upon it.

For wide belts, when there is sufficient room, a yet better form of shipper consists of two rolls which may be pressed directly upon the surface of the belt. These are placed at such angles with it that they will act similarly to a roller moving a heavy body around a corner or to a guide roll on a felt. Sometimes these rolls are placed in the same frame so that the belt will run between them, and when this is done the frame is moved up to throw it in one direction and down to throw it in the other if the belt is horizontal. A much more satisfactory method, however, is to place the rolls in separate frames outside of the belt. This will cost more to erect, but there need be no danger of the belt striking against them when they are not in use. After shifting the rolls must be raised far enough from the belt to prevent any danger of their being struck if the belt should happen to flop. The rolls must be placed as near to the driven pulleys as possible, but must be far enough away so as not to strike them when let down upon a slack belt. The rolls are best made of iron pulleys from 4 to 8 inches in diameter mounted on shafts running in ordinary boxes. They should be placed at an angle of about 15° with the line shaft, but should be in a plane parallel to the belt, so that they will bear evenly on the entire surface of it; this will bring the two rolls, since they are inclined in opposite directions, at an angle of about 30° with each other.

When the belt is to be shifted the roll which will throw it in the desired direction is let down until it presses evenly against it. Since the roll is canted in a direction at an oblique angle with that in which the belt is running, it will tend to throw the latter to one side. There must be some means for raising the roller very quickly from the belt after shifting, as otherwise the latter will be liable to run off the pulleys, or to burn its edge. A lever is perhaps the simplest means to use, but it must be powerful enough to be easily operated. A rack and pinion operated with a hand wheel works well if it can be arranged to raise the pulleys very quickly from the belt. I have seen a screw used, but it works too slowly to be satisfactory.

I see no reason why for certain cases a single roll could not be used for the shipper. This would have to be arranged with the bearing at one end on a pivot to allow the bearing at the other end to swing around. If the belt was to be moved in one direction the roll would be at one angle with the belt, and when the belt was to be shipped back the roll would have to be moved through an angle of about 30° in order to operate in the opposite direction. An arrangement similar to this has been used on light belts. For heavy belts such a construction would of necessity be somewhat cumbersome, and great care would have to be exercised when building it in order that it might operate smoothly and not get out of order when in use.

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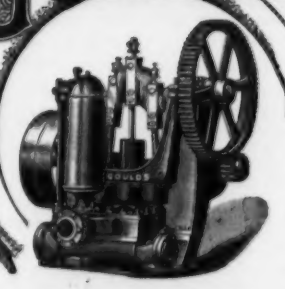
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Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED AUGUST 24, 1894.

An. Colors..	262	$15,853	Paper.....	315	$17,360
Alum.....	2	15	Steel Pens...	5	4,594
Alum's Cake	—	—	Stationery...	9	266
Bl. Powders	351	7,254	Slate Pencils	—	—
Soda Ash...	7,258	19,687	Clay.....	—	4,557
Soda, Caus.	225	2,975	J'te B'ts, &c.	14,346	62,678
Soda, Sal....	—	—	P. Hangings	7	278
Soda, Hypo.	—	—	P'p'r Stock..	2,441	15,453
Ultramarine	30	440	Terra Alba..	7	—
Books.....	457	50,461	Waste.....	—	—
Newspapers.	274	8,750	Wood Pulp..	579	4,654
Engravings.	67	8,024			
Ink.....	80	530			
Lead Pencils	1	3	Totals....	26,709	223,841

Imports General Merchandise for the week ended August 24, 1894.....$5,804,028

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO AUGUST 29, 1894.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	1,249	....	....	....	....
Antwerp.....	822	275	698	....	10,192
Aspinwall....	90	....	....	....	....
Bordeaux.....	684	....	....	....	....
Bremen	672	25	6	....	6,084
Bristol.....	....	....	....	....	3,489
Buenos Ayres.	157	....	...	....	....
Calcutta.....	....	....	....	....	2,797
Cent. America	60	....	....	....	....
Christiania....	....	....	511	....	654
Copenhagen..	353	....	1,197	....	1,369
Dublin.....	....	186	....	....	....
Dundee.....	....	....	....	....	658
Dunedin.....	....	....	....	....	183
Fiume.....	....	....	99	....	....
Geestemunde.	252	....	....	....	1,309
Genoa.....	....	....	....	....	4,350
Glasgow.....	490	77	18	....	369
Gothenburg..	91	....	107	....	....
Hamburg.....	1,313	251	490	....	3,177
Hamilton.....	....	....	....	....	42
Hiogo.....	9,001	....	....	....	....
Hong Kong...	43	....	....	....	....
Hull .....*a*	2,517	185	922	....	13,137
Kobe.....	32,226	....	....	....	....
Leghorn.....	2,219	....	....	....	....
Leith.....	....	150	....	....	138
Liverpool.....	1,030	881	....	....	20,239
London.....	4,190	1,534	20	....	9,055
Marseilles....	406	....	....	....	486
Nassau.....	48	....	....	....	15
Newcastle....	....	73	....	....	3,860
Rio.....	26	....	....	....	..
Rotterdam....	1,030	119	597	....	9,089
Southampton.	....	....	....	....	160
Stettin.....	2,800	....	747	....	7,481
Trieste.....	....	....	49	....	....

a. Including 347 bales cotton waste.

NEW YORK IMPORTS.

FROM AUGUST 22 TO AUGUST 29, 1894.

Paper Stock.

J. Libmann & Co., State of California, Glasgow, 96 bs. rags.

Burgass & Co., by same, 58 bs. manillas.

G. Hamilton, Martello, Hull, 18 tons chemical fibre.

Perkins, Goodwin & Co., Tauric, Liverpool, 134 bs. manillas.

J. W. Mason & Co., by same, 98 bs. manillas.

Train, Smith & Co., by same, 138 bs. bagging.

Darmstadt & Scott, by same, 18 bs. papers.

James Pirnie, by same, 23 bs. papers, 624 bs. bagging.

Lewy Brothers, Europe, London, 330 bs. rags.

J. Turpie, by same, 155 bs. bagging.

Train, Smith & Co., by same, 205 bs. bagging.

James Pirnie, New York, London, 129 bs. bagging.

Lewy Brothers, Virginia, Stettin, 488 bs. rags.

Paper.

Henry Bainbridge & Co., Monomoy, Bristol, 9 cs.

The Scovill & Adams Company, Exeter City, Bristol, 1 cs.

Austin & Robertson, by same, 20 cs.

E. G. Soltmann, Noordland, Antwerp, 6 cs.

R. F. Downing & Co., by same, 3 cs.

Dresden Photo Company, by same, 52 cs.

American Aristotype Company, by same, 22 cs.

A. M. Tenney, Cevic, Liverpool, 1 cs.

B. Lawrence Stationery Company, Normannia, Hamburg, 18 cs.

John Moore & Co., Virginia, Hamburg, 37 cs.

L. De Jonge & Co., Amalfi, Hamburg, 16 cs.

S. Ascher, Rhaetia, Havre, 1 cs.

Eckmeyer & Co., Saale, Bremen, 4 cs.

R. F. Downing & Co., Maasdam, Rotterdam, 10 cs.

E. & H. T. Anthony & Co., by same, 4 cs.

Kupfer Brothers, by same, 9 cs.

Dingelstedt & Co., by same, 28 cs.

L. De Jonge & Co., by same, 8 cs.

Bannatt Brothers, by same, 16 cs.

J. Dickinson & Co., Umbria, Liverpool, 7 cs.

John Hunter, Buffalo, Hull, 7 cs.

M. Ward & Co., by same, 18 cs.

American Tobacco Company, La Normandie, Havre, 52 cs.

J. C. Druckleib & Co., by same 10 cs.

G. W. Sheldon & Co., by same, 27 cs.

C. B. Seabury, Tauric, Liverpool, 3 bs.

IMPORTS of Rags and other Paper Stock at the Port of New York for the month ended August 31, 1894, from the following named Ports, showing Quantities from each Port.

Whence Imported.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood*	*Manilla Stock.*
	Bales	Bales	Tons	Tons	Bales
Antwerp	465	—	20	—	830
Bremen.....	—	—	—	—	2,398
Bristol.....	—	—	—	—	136
Buenos Ayres.....	34	—	—	—	—
Christiania.....	—	—	105	—	180
Glasgow.....	96	—	18	—	126
Hamburg.....	75	31	—	—	112
Hull.....	—	—	—	—	1,275
Leghorn.....	535	—	—	—	—
Liverpool	15	41	—	—	5,436
London	829	100	—	—	634
Nassau.....	—	—	—	—	15
Newcastle.....	—	—	—	—	81
Rotterdam	90	—	31	—	506
Stettin.....	488	—	51	—	—
Totals.....	2,627	172	225	—	11,729

Special List of Imports of Paper Stock at the Port of New York for the month ended August 31, 1894.

Importers.	*Rags.*	*Old Papers.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales	Bales	Tons.	Tons.	Bales
Bertuch, F., & Co...	....	....	105	....	20
Burgass & Co.....	34	....	....	....	302
Castle & Gottheil ...	430	....	15	....	130
Darmstadt & Scott..	....	18	....	....	....
Dutton, H., & Co....	....	....	....	....	633
Hatton, E., & Co	....	....	....	....	1,469
Hamilton, G.....	....	....	18	....	....
Jessup & Moore Paper Co.....	105	....	....	....	....
Lewy Brothers.....	1,273	....	....	....	787
Libmann, J., & Co...	118	....	....	....	81
Mason, J. W., & Co..	....	....	....	....	286
Millar, G. W., & Co.	..	....	....	....	257
Montell, F. T. & Son.	....	....	....	....	15
Oelrichs & Co.....	....	....	....	....	15
Perkins, Goodwin & Co.....	....	....	....	....	748
Pirnie, James.....	113	23	....	....	5,305
Rau, G.....	389	....	87	....	....
Salomon, F., & Co..	75	31	....	....	292
Smith, Augustine, & Co.....	....	100	....	....	....
Stratford, G.....	....	....	....	....	145
Train, Smith & Co....	90	....	....	....	960
Turpie, J.....	....	....	....	....	155
Totals.....	2,627	172	225	....	11,729

BOSTON IMPORTS.

FROM AUGUST 23 TO AUGUST 29, 1894, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Bothnia, Liverpool, 5 bs. periodicals.

Dennison Manufacturing Company, by same, 16 bs., 36 cs. tissue paper.

G. C Goodwin & Co., Cambroman, Liverpool, 8 cs. toilet paper.

J. Dickinson & Co., Venetian, London, 14 cs. paper.

Paper Stock.

Train, Smith & Co., Cambroman, Liverpool, 247 bs. rags, 41 bs. manillas, 120 bs. waste paper.

Train, Smith & Co., Galileo, Hull, 530 bs. rags.

Horace Dutton & Co., British Queen, London, 27 bs. rags, 300 bs. flax waste.

Wheelwright Paper Company, by same, 86 bs. waste paper.

Horace Dutton & Co., Venetian, London, 9 bs., 160 coils manillas.

Crocker, Burbank & Co., by same, 105 bs. waste paper.

Wood Fibre.

Fred. Bertuch & Co., Galileo, Hull, 660 bs.

Castle & Gottheil, Polynesia, Hamburg. 260 bs.

Sizing.

C. A. Cheney, Cambroman, Liverpool, 411 bags.

Bleaching Powder.

J. L. & D. S. Riker, Cambroman, Liverpool, 174 cks.

J. L. & D. S. Riker, Norseman, Liverpool, 137 cks.

Fuerst Brothers, Galileo, Hull, 49 cks.

Caustic Soda.

Edward Hill's Son & Co., Cambroman, Liverpool, 175 drums.

Order, Canada, Norseman, Liverpool, 90 drums.

Soda Ash.

Warren & Co., Norseman, Liverpool, 71 cks.

Warren & Co., Cambroman, Liverpool, 472 cks.

Wing & Evans, Bothnia, Liverpool, 32 cks., 400 bags.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED AUGUST 25, 1894.

Paper.

O. G. Hempstead & Son, Hungaria, Hamburg, 16 cs.

Wolf & Co., by same, 20 cs.

Paper Stock.

Order, Enskar, London, 146 bs. waste paper.

Same, British Crown, London, 77 bs. bagging.

Soda Ash.

Brown Brothers & Co., Ohio, Liverpool, 56 cks.

Salt Cake.

Brown Brothers & Co., Ohio, Liverpool, 183 cks.

EXPORTS of Paper, &c., from New York for the Week Ended August 28, 1894.

BOOKS, cases, to Liverpool, 49; London, 10; British East Indies, 17; British Australasia, 19; Venezuela, 2; British West Indies, 4; Cuba, 1 Nova Scotia, 1; San Domingo, 1; Antwerp, 5; Bremen, 1; Brazil, 1; Constantinople, 1; Glasgow, 2; Mexico, 2; Tasmania, 6; Naples, 6; Trebizond, 2.

PAPER, to Cuba, 4,675 pkgs.; British West Indies, 1,018 pkgs.; London, 23 cs.; Central America, 12 pkgs.; British Australasia, 316 pkgs.; Colombia, 43 pkgs.; Hamburg, 12 cs.; Mexico, 140 pkgs.; Brazil, 157 pkgs.; Tasmania, 12 cs.; Liverpool, 7 cs.; Venezuela, 9 pkgs.; Marseilles, 2 cs.; Manchester, 40 pkgs.; Argentine Republic, 4 cs.; Bristol, 40 pkgs.; Bremen, 2 cs.; Danish West Indies, 22 pkgs.; Dutch West Indies, 6 pkgs.; Hayti, 2 pkgs.; Havre, 1 cs.; Hull, 2 pkgs.; San Domingo, 59 pkgs.; Smyrna, 2 cs.

STATIONERY, cases, to British West Indies, 8; Cuba, 18; British Australasia, 11; Colombia, 13; Mexico, 18; Central America, 2; Hamburg, 16; Tasmania, 16; Rotterdam, 1; Siam, 1; Trebizond, 1; Brazil, 8; Copenhagen, 3; Central America, 2; Dutch West Indies, 1; Gibraltar, 1; Hull, 2; Liverpool, 2; Southampton, 1; San Domingo, 5; Smyrna, 2; Venezuela, 9.

STRAWBOARD, cases, to Cuba, 15.

CARDBOARD, cases, to British Australasia, 24; Colombia, 1.

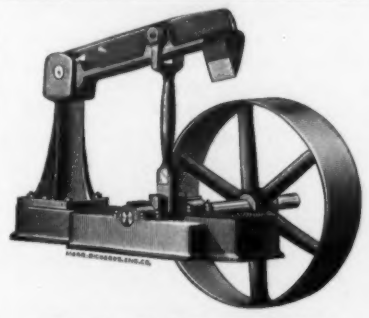
PAPER CAPS, cases, to Argentine Republic, 6; Brazil, 1.

PAPER BAGS, cases, to Uruguay, 7.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs.....	6,509	$16,117
Paper, cases.....	88	1,020
Books, cases.....	129	5,536
Stationery, cases.....	180	8,772
Rosin, bbls.....	7,117	16,650
Totals.....	14,023	$48,095

Exports General Merchandise for the week ended August 28, 1894..... $6,754,304



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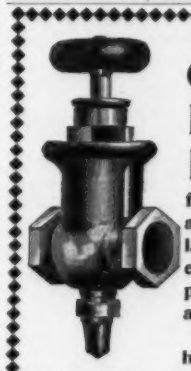

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140 NASSAU STREET, NEW YORK.

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NEW YORK: SATURDAY, SEPTEMBER 1, 1894.

AN epoch in paper making technology is marked by the publication of "The Chemistry of Paper Making," which, it is announced, will be ready for delivery to subscribers within the coming week. No work of this kind has appeared before, strange as it may seem, and as a contribution to industrial science it will rank among the leading publications of the day.

IN a former issue of THE PAPER TRADE JOURNAL it was intimated that the reciprocating taxes on commerce proposed at the Inter-Colonial Conference held at Ottawa in July would prove unacceptable to Great Britain. The surmise has been confirmed by the attitude of the British press. Briefly stated, the proposition advocated the levying of a small tax upon all goods brought into Great Britain except such as came from the colonies, thus giving colonial products an advantage in her markets. In reciprocation the colonies should levy a similar tax upon all foreign imports over and above any tariff already levied on foreign and British imports alike, thus giving British manufacturers an advantage in colonial markets. This agreement was not to interfere in any way with the rights of of the colonies to impose customs duties for revenue purposes. In the first place, taxing imports is not in harmony with the trend of English opinion, and to double on their tracks before the whole world in the way proposed, even to gain the obvious advantages of commercial union, was too much to expect of Englishmen.

OTHER points of view are more impressive. The import trade of the British Empire has a value in round numbers of about £400,000,000, of which less than £80,000,000 goes to the colonies. It will be seen at a glance that the trade of the United Kingdom would be taxed more than four times as much as the trade of all of her dependencies put together. It does not appear that this difference is balanced by any corresponding gain; indeed every advantage seems to be with the colonies, the United Kingdom being their principal market, while they are not the principal market of the United Kingdom, their exports to that country considerably exceeding the value of their imports from all other countries put together, so that loss on the one hand is made good on the other. Not so the mother country, however, which would lose on a trade valued four times greater than that on which something might be gained. This is one phase of the opposition. Another is that the United Kingdom cannot afford to increase the cost of raw material and breadstuffs. In the former case the additional expense would of course fall upon the manufacturer, while the maintenance of a low export price to meet competition would affect indirectly the wage earners. Any tax upon food would certainly arouse the ire of the British artisan. Therefore, as the London *Times* intimates, the matter of inter-colonial preferential rates must wait until the colonies can offer terms a little more evenly balanced.

THE Government of the United States of Colombia has come forward with a grievance, and, it is said, will claim damages arising from the enforcement of the discriminating clause in the reciprocity provisions of the recently superseded tariff law. The Colombian Government refused to negotiate a reciprocity treaty at the time other South American Governments did so, and as a consequence imports from that country were assessed the usual duties, while her neighbors received more favorable terms. It appears that in a clause in the treaty of 1846, made with New Granada, which was the name of the republic up to 1862, there is a stipulation which provides that no higher or other duties shall be levied by the United States upon imports from New Granada than are levied on like articles, produce or manufactures from any other country. This treaty is yet in force, and the Colombians claim that the admission of products from other countries at a lower tariff rate than was accorded the same products from their country was a violation of treaty obligations, for which substantial damages can be collected in the form of refunded duties. Our Government has been slow to admit this claim, but if the facts are as stated there seems no course open but to walk up to the Captain's office and settle. The burdens imposed by careless legislation unfortunately fall upon the people and not upon their heedless representatives—" the more's the pity."

LEGAL RESPONSIBILITIES OF LABOR ORGANIZATIONS.

IN an address before the Bar Association at Saratoga, Judge Charles C. Allen made the following pertinent and suggestive remarks on injunctions and their relation to labor organizations:

One point concerning organized labor is plain: Under the existing system of jurisprudence the laboring classes cannot hope, and have no right to expect recognition in the law for their organizations until they assume a responsibility commensurate with the privileges they claim. If organized labor is to contest with organized capital it must have a legal status in some sort analogous to organized capital. If it is to make and break contracts, fix terms and conditions of employment, have a voice in the management of business, and dictate the classes of persons who are to be employed, it must have a legal entity which shall be able to respond in damages for its breaches of contract or its torts, and be subject to the restraining process of the courts on well-defined juridical lines.

There will be little dissent from these views on the responsibilities attaching to organizations which by concerted action have the power to demoralize business and inflict injury and loss. It has, however, been pretty generally understood hitherto that labor leaders were much more interested in fomenting trouble than in studying the nature of their responsibilities. It is therefore meet and proper to point out that under our legal system there is no chance for a recognition for their organizations until they habilitate themselves with and acknowledge their legal responsibilities. As at present constituted all labor organizations are irresponsible, and therefore in times like those which recently occurred in Chicago and elsewhere are in the eyes of the law mere mobs and lawless aggregations. We would like to see labor through its organizations become a "legal entity," subject to the same processes which govern other organizations, because we believe that it would not only operate as a restraining influence, but would be instructive and improving, as well as an encouragement to manly self-dependence in thought and action.

PAPER STOCK IMPORTS.

The imports of rags and other paper making fibres—jute butts excepted—at the port of New York during the month ended August 31, as reported, amounted to 14,258 bales and 225 tons, the difference in quantities compared with the corresponding month of 1893 being a decrease in rags of 1,196 bales, in old papers a decrease of 475 bales, and in manilla stocks an increase of 6,783 bales. There was no wood pulp imported during August, and of chemical fibre 61 tons more than the July imports were brought in. The appended tabulation shows the quantities of paper making materials of the kinds mentioned which were reported as having been imported during the month of August for the last five years:

	1894.	1893.	1892.	1891.	1890.
Rags.....bales.	2,627	3,823	7,701	7,172	7,939
Old Papers.....	172	646	975	498	1,395
Manilla Stocks..	11,729	4,946	12,665	10,981	16,203
Wood Pulp,tons.	....	....	....	215	....
Wood Fibre.....	225	1,331	3,000	1,344	1,002

The arrivals from the different ports were as follows: Antwerp, 465 bales rags, 20 tons chemical fibre, 830 bales manillas; Bremen, 2,938 bales manillas; Bristol, 136 bales manillas; Buenos Ayres, 34 bales rags; Christiania, 105 tons chemical fibre, 180 bales manillas; Glasgow, 96 bales rags, 18 tons chemical fibre, 126 bales manillas; Hamburg, 75 bales rags, 31 bales old papers, 112 bales manillas; Hull, 1,275 bales manillas; Leghorn, 535 bales rags; Liverpool, 15 bales rags, 41 bales old papers, 5,436 bales manillas; London, 829 bales rags, 100 bales old papers, 634 bales manillas; Nassau, 15 bales manillas; Newcastle, 81 bales manillas; Rotterdam, 90 bales rags, 31 tons chemical fibre, 506 bales manillas, and Stettin, 488 bales rags, 51 tons chemical fibre.

Watermarks.

BY DANDY.

It is reported that "all of the paper mills in Wisconsin" have been sold to an English syndicate. Well, well; that's quite a fair day's work, isn't it? and I should think both buyers and sellers would be tired after such a "hustle."

There have been would-be purchasers looking over some properties out there, but the statement that "all the mills in Wisconsin" have been sold sounds as though it was one of the stories told by "Peck's Bad Boy."

Now, if that English syndicate will only come East it can find several other mills, which by judicious coaxing it may induce the present owners to part with.

Here is something new: A Scotch paper maker came to America for a job. He had the toothache and went to a dentist. "Hae you thotlaugh-gas?" he asked. The dentist said he had, and brought forward a bag of it. "I'll na tak thot balloon in ma mooth," said the Scotchman. So the dentist put the forceps in his patient's mouth, but the Scotchman closed his teeth down hard and held the instrument fast. The dentist could not coax the Scotchman to open his mouth, and therefore resorted to strategy. The assistant was given a bonnet pin and told to stick it into a fleshy part of the Scotchman after his teeth had again caught the forceps. This was done, and when his mouth opened the tooth was jerked out. "Aa," said the Scotchman, "if I had a knoon that the ruts went down so far I wad hae soocked the balloon."

A New York paper man who has just returned from the Isle of Shoals tells of the following incident which occurred there: A wealthy amateur artist, who, according to local traditions, "spoiled canvas," heard that a well-known artist was visiting a neighboring hotel. He sent his card to the artist, inviting him to call at his studio.

Soon after a boat drew up to the dock, and a man, who the local amateur supposed was the great artist, came ashore. The amateur rushed up to him, grasped his hand cordially, carried him off to the studio, "blew him off" to champagne, showed him the pictures and received commendations from the alleged N. A., whom he then escorted back to the boat.

The amateur then stepped into the office of the hotel near his studio and said to the clerk, "Did you see my friend, Mr. Chrome Yellow?" "Who?" queried the clerk. "Why, Chrome Yellow, the great artist, who has just been paying me a visit!" "Chrome Yellow nothing!" said the clerk; "that's the head waiter over at the other hotel."

The head waiter when telling his side of the story said: "What's the matter with Permanent Mauve, anyway?" He grabbed my hand, called me 'Chrome Yellow,' said that he was delighted to see me, treated me to champagne and showed me his pictures. Seems to me he has gone crazy."

A paper stock man is in trouble. His pet dog swallowed a rubber ball yesterday, and, while the dog does not mind it, his owner is a good deal worried. His friends (not the dog's, but the man's) have offered various solutions of the difficulty, but none of them are satisfactory. Some have suggested that he should now feed the dog on a tennis racket; another suggests that a "League" umpire ought to be able to settle what happens after "one ball," while another suggests that in order to earn his base on balls, the dog will have to swallow three more.

Trade Talks.

M. H. Dingee, of M. H. Dingee & Co., 139 Water Street, New York—The use of barytes as a filler in the manufacture of paper is little known in this country, and its real benefits are yet to be demonstrated; yet I am very sure that it can be shown to the satisfaction of all manufacturers that this mineral as a filler is superior to clay, talc or anything else used for this purpose. I have been engaged in the mining and preparation of barytes in Virginia for about ten years, and now practically control the production of it in that State, operating nine mines and four mills, employing about 500 men, and manufacturing ten grades of barytes, which are sold at varying prices. It costs slightly more than other fillers, but there is no doubt that it makes a finer, more serviceable and whiter paper, a sheet of writing paper looking almost black beside it, and it will not fade. It will increase the tensile strength of paper, which clay will not do. Barytes not only fills the pores, but also, as I have said, increases its tensile strength, as there is no acid in it. I understand that in using clay it is put into the beaters and that a great percentage of it is lost by its running off with the water. Here, too, is a benefit from the use of barytes. It is indissoluble, and yet it permeates the water thoroughly, neither sinking to the bottom of the vat nor rising to the top of the water. A great saving is therefore made. I at one time sent some barytes to a paper manufacturer in Virginia, but as he failed soon afterward, and I was unable to get into his mills to see for myself what practical use he had made of it. I did not secure results as to its benefits in the manufacture of paper. However, it has been used to a considerable extent among paper manufacturers in Holyoke. When the tariff was under consideration in Congress I appeared before the committee and argued for the retention of the present duty on barytes, but it was reduced to 55 per cent. Our competitors abroad are the Germans, who, because they live on almost nothing, can produce barytes more cheaply than we. I have traveled about extensively and spent a great deal of money in looking into the manufacture of barytes, the uses to which it can be put and the benefits to be derived from it, and I am sure that if paper manufacturers would look into the subject barytes would be adopted as a filler in the production of paper, as it is now used as a basis in the mixing of pigments in the arts and sciences, in the manufacture of leather and in other industries. That is all we ask of the paper manufacturers—that they will look into it for themselves, make their own tests and demonstrate its practicability, for if it is no good we want to know it, and if it is practical we firmly believe that we can furnish it in unlimited quantities. That is the principle by which I was brought up—if we cannot benefit the manufacturer we do not want to take his money without giving him a return.

Personals.

L. V. Walkley and F. W. Leinback, of the Consolidated S. O. S. Bag Company, New York, and James B. Forsyth, of Stone & Forsyth, Boston, Mass., will leave to-day for a trouting expedition in Canada.

The numerous friends of Albert A. Carey (member A. S. M. E.), of the Abendroth & Root Manufacturing Company, New York, will be sorry to learn that he has been seriously ill for the past few weeks with appendicitis, and was recently obliged to undergo an operation. He is at present doing nicely and it is expected will be out again within a few days.

Communications.

Laced Belts.

MEDUSA, N. Y., August 29, 1894.

Editor of The Paper Trade Journal:

I noticed in a late issue of your valuable paper an article by Sandford E. Thompson on spliced belts. Any belt should have one laced joint, so that it can be taken up when it gets slack. A tightening pulley or idler will shorten the life of the belt on which it is used. A belt can be laced in such a manner that it will run for months without giving any trouble; should it require tightening the lacing can be easily and quickly removed and a new joint as quickly made. I tried this plan first on an old rubber fan pump belt which was tearing out of the lace holes and breaking the laces. That belt ran nearly a year, and the laced joint was good when the belt was replaced by a new one.

Should any one of your readers wish to know more about this style of lacing a belt he can obtain full information by addressing me at Medusa, Albany County, N. Y.

J. T. MILTON.

Toilet Paper Fifty-two Years Old.

BOSTON, August 21, 1894.

Editor of The Paper Trade Journal:

I inclose two samples of tissue paper manufactured by W. S. Shattuck, at Sacarappa, Me., in 1842.

The stock was made for toilet paper for the Astor House, New York; Barnum Hotel, Baltimore; Tremont House, Boston; American House, Philadelphia, the then leading hotels in this country.

WM. PARKER JONES.

[The samples have been received. The date given for the manufacture of toilet paper is the earliest we know of. —ED.]

Midland Paper Manufacturing Company.

KANSAS CITY, Mo., August 22, 1894.

Editor of The Paper Trade Journal:

Since your issue of the 18th inst. a part of the remaining necessary funds for the completion of our capital stock has come in and we are negotiating for the balance, which should be forthcoming by the first of September, when we shall go ahead. With the Missouri Pacific Railroad and the Missouri River in front and the C. and A. RR. switches at the back of the mill we tap the best mines of Missouri and Kansas. We are out of the reach of the Missouri, but are accessible to its waters if necessary, with less than a mile between our mill and the passenger and freight depots. A large part of our building is completed. Our spring water in quantity and analysis is abundant and good.

We shall also manufacture envelopes and paper bags. We expect to be in full operation by next Christmas. We have decided to interest all the work people of this mill to some extent. We are aware that there are a few shabby reasons against this plan, but we also know that every thousand dollars put into our mill by practical workmen who have earned their money by the sweat of their brow is worth vastly more to us than the same amount of money represented by less energy and care.

T. C. BRIGHT, Manager.

Changes, Removals and New Firms.

Dan McGary, publisher, Houston, Tex., has sold out.

The *Weekly Argus*, Pensacola, Fla., has suspended publication.

The *Index*, Pen Argyl, Pa., has been bought by C. M. Smith.

Joe M. Smith, dealer in stationery, &c., Galveston, Tex., has sold out.

Spurlock & Capito, stationers, San Buenaventura, Cal., have sold out.

F. J. Howe & Co., dealers in wall paper, Worcester, Mass., have sold out.

A. C. Treadway & Co., dealers in wall paper, Detroit, Mich., have sold out.

James C. Coombs, publisher of the *Gazette*, Middleboro, Mass., has sold out.

The *Vox Populi* is the name of a new Populist paper just started in St. Louis, Mo.

The *Star*, Quincy, Ill., has been sold to Horace J. Farrar. The editor is H. E. Puette.

Greensburg, Ind., has a new Populist paper called *Free Land*. A. S. Edwards is editor.

J. G. Humphreys, bookseller and stationer, Vernon, Tex., has removed to Fort Worth.

Nashville, Tenn., has a new paper called the *Republican*. Luke T. Walker is editor and proprietor.

Owens & Broughton, bookbinders, Fond du Lac, Wis,, have been succeeded by Beeson & Broughton.

An incorporated company has been formed in Chicago, Ill., to publish a new paper to be called the *Daily American*. The incor-

porators are John W. Dooley, William P. Fisher and William S. Hefferan. Capital stock, $500,000.

Plattsburg, N. Y., has a new paper called the *Press*. W. H. Ferrell is editor, and T. F. Mannix manager.

The Queen City Publishing Company, Seattle, Wash., has been incorporated. Capital stock, $10,000.

The Columbian Publishing Company, Newark, N. J., has been incorporated. Capital stock, $25,000.

The *Review* Publishing Company, Williamsport, Pa., has been incorporated. Capital stock, $5,000.

E. Prinbury & Co., stationers, &c., Nanaimo, B. C., have opened a branch store at Union, same province.

The M. C. Beale Company, Saco, Me., has been incorporated to do a general printing business. Capital stock, $50,000.

H. Leland Thompson, publisher of the *Herald*, Thomaston, Me., has sold out to the Knox County Publishing Company.

The Ohio *Staats-Zeitung* Company, Toledo, Ohio, has been incorporated to succeed J. Van Deberge & Co., publishers.

The St. Paul *News*, St. Paul, Minn., has become the property of William E. Magraw by a foreclosure of bonds to the amount of $50,000.

The Amidon Paper Company, Lancaster, N. H., has been incorporated with a capital stock of $20,000.

The Nashua River Paper Company, East Pepperell, Mass., has been organized with Geo. F. Keyes president and Charles M. Gage vice-president.

The *Times*, Craig, Neb., has been bought by a syndicate of farmers and removed to Tekamah, same State, where it will be published as a Populist organ.

Kellogg & Hafey, proprietors of the Holyoke Printing Company, Holyoke, Mass., have dissolved partnership. The business will be continued by Mr. Hafey.

The *Expositor* is the name of a new religious journal published in St. Louis, Mo., in the interests of colored Baptists. J. L. Cohrow is editor, and Rev. Mark Thompson associate editor.

The Miller Photograph Paper Company, Rochester, N. Y., has been incorporated. Capital, $60,000. Directors, Charles F. Pond, Charles D. Milne, Thomas J. Swanton and Charles F. Miller.

Notice has been given of application for the incorporation of the Union Card Company, Montreal, Que., by G. B. Burland, Wm. Brisbane, J. H Burland, Dr. Andrew McPhail, R. C. Smith and G. H. Burland, of Montreal, and Dr. H. M. Ami, of Ottawa. Capital stock, $100.000.

The Garden City Stationery Company, of Elkhart, Ind., will be reorganized on October 1, when the capital will be increased to $50,000. Charles H. Wright, of Chicago, who for the past ten years has been the Western representative of W. H. Hasbrouck & Co. and the Birnie Paper Company, will be the secretary of the Company and active manager of the business.

Notice has been given of application to incorporate the Canada Engraving and Lithographing Company, Montreal, Que., by Jeffrey Hale Burland, Wm. Brisbane, Frederick Henry Dennison, James D. Monk, Robert C. Smith, George Hale Burland, Archibald Matthews, Charles Pearson, Robert Percy, of Montreal, and Thomas Gillelam, of Ottawa. Capital stock, $150,000.

Failures.

The *Outdoor Sports* Company, publisher of *Outdoor Sports*, St. Louis, Mo., assigned on August 19 to Charles R. Frederickson. Assets, $816.52.

John W. Heiskell, bookseller and stationer, Wheeling, W. Va., has made an assignment, but his affairs will be immediately arranged, and he will resume business.

Judgments aggregating $10,000 were entered on August 25 against the Ottawa *Evening Journal*, published by Lester A. Rose, Ottawa, Ill., and the office was closed by the sheriff.

C. F. Berry filed a petition in the Insolvency Court on August 21 against the *Traveller* Publishing Company, Boston, Mass. An order returnable September 28 was issued, at which time the question whether the *Traveller* Company is insolvent or not will be decided.

Fires.

J. W. Northrup, publisher and printer, Giddings, Tex., has been damaged by fire.

Jeremiah Donovan, dealer in paper stock, New Haven, Conn., has been damaged by fire; insured.

The rag and paper warehouse of the H. F. Watson Company, Erie, Pa., was damaged by fire August 23. The loss was about total, and the insurance was $29,500.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
Andrew W. Mitchell, Boston, Mass. (B. S.)..	$4,000
E. W. Longfellow, Haverhill, Mass.....	600

WESTERN STATES.

C. H. Eberle, Downey, Cal.....	193
Nonpareil Printing Company, Council Bluffs, Ia. (B. S.).....	624
S. A. Brewster, Creston, Ia.....	1,000
S. A. Brewster, Creston, Ia.....	500
F. N. McCormick, Pringhar, Ia.....	213
Ennis & Kelley, South English, Ia.....	225
Wm. H. McCartney, Charlevoix, Mich.....	198
Frank W. La Grass (La Grass & Plummer) Minneapolis, Minn. (B. S.).....	200
M. Fox (admr.), St. Paul, Minn.....	1,000
E. J. Luther, West Duluth, Minn.....	350
E. G. Smith, Butte, Mont. (Real).....	1,000
John McIntosh, Lincoln, Neb.....	365
Geo. F. Aschemoor, Cincinnati, Ohio (B. S.)	500
A. H. Hoover & Co., Cincinnati, Ohio (R.)..	600
D. H. Mitchell, Springfield, Ohio.....	624
Elonzo J. Norris, West Superior, Wis.....	375

SOUTHERN STATES.

Robinson Steam Printing Company, Savannah, Ga.....	1,491
Robinson Steam Printing Company, Savannah, Ga.....	1,040
M. S. Durham, Moberly, Mo.....	600

LIENS DISCHARGED.

S. A. Brewster, Creston, Ia.....	1,250

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, August 31, 1894.

THE MONEY MARKET.—The stock market was moderately active and most of the moving shares closed at higher figures. The market for call loans on stock collateral was easy, all business at the Stock Exchange being at 1 per cent. Banks and trust companies find less employment for their balances on time. Rates are quoted on the following basis: 1½ per cent. for thirty days, 2 per cent. for sixty days, 2½ per cent. for ninety days, 3 per cent. for four, 3½ per cent. for five and 3¾@4 per cent. for six months or longer dates. Foreign houses again offered at 2½ per cent. for four months, with a gold note. There was a small business in commercial paper, demand being good and offerings light. Quotations are: 3@3¼ per cent. for sixty to ninety day indorsed bills receivable, 3¼@3¾ per cent. for four-month commission house names, with a few sales at a slightly higher rate; 3¾@4 per cent. for prime, and 4½@5½ per cent. for good four to six month single names. Second grade names sell slowly. The market for foreign exchange was easier for short bills and cables owing to offerings against securities sent abroad, but the moderate receipts of commercial acceptances imparted a firm tone to long bills. Posted rates were $4.86½ for sixty days and $4.87½ for sight. Actual rates were $4.85½@4.86½ for sixty days and $4.86½@4.87½ for sight.

THE PAPER TRADE.—In nearly all directions one hears complaints of low water, and this fact is troubling manufacturers very much—more so than usual. Reports from mills show a better call for goods, and Book manufacturers have considerably more to occupy their machines than they have had. Writings are somewhat better and News is well under control, the lessening of product in the latter line from low water being felt in some quarters. Dealers report business as about the same, although some few say that they are actually moving more goods.

JUTE BUTTS.—There is nothing doing in the market. There is no spot stock. The Lord Templeton, 14,346 bales, and the Glenesslin, 7,426 bales, arrived this week, but cargoes are all sold.

WOOD PULP.—Many grinders are stopped because of low water, and if the dry weather continues more of them will be obliged to stop, and reserve stocks will be called on. This is the main feature of the market.

WOOD FIBRE.—There is a fair call for domestic grades of Soda and Sulphite. Domestic Soda is quoted at 2¼@3¼c. for Bleached. Domestic Sulphite is quoted at 1¾@2¾c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.25c.; Bleached, do., 4@4½c.; Bleached Straw Pulp, 4@4½c. There were 18 tons of Chemical Fibre imported at this port this week, being all from Glasgow.

FOREIGN RAGS AND PAPER STOCK.—There has been considerable inquiry for rags this week and cables of offers, &c., have been plentiful. The resulting business has not been large, but it shows improvement. A cargo of 1,611 bales of Japanese Blues arrived this week and there is another cargo of 1,000 bales afloat, which is all of this class of stock which can reach here before the new year. Of the cargo now in port 100 tons were sold from ship to dealer at 1½c., and there was also sale of 50 tons ex-store to dealer at the same figure. In German Blue Cottons we note sale of 25 tons on spot at 1¼c., and in Linens sale of 10 tons SPFF's on spot at 3½c. Imports at this port for the week aggregated 2,486 bales and 18 tons, being 904 bs. rags, 41 bs. papers, 18 tons chemical fibre and 1,541 bs. manillas. Ports of shipment and quantities were as follows: Glasgow, 96 bs. rags, 18 tons chemical fibre and 58 bs. manillas; Liverpool, 41 bs. papers, 994 bs. manillas; London, 320 bs. rags, 489 bs. manillas; Stettin, 488 bs. rags.

DOMESTIC RAGS.—Supplies are not as plentiful as they were and the market has hardened somewhat. There have been sales of 100 bs., No. 2's at 1.15c. f. o. b., New York, and there was refusal to shade this price on a further lot of 100 bs. Whites are firm at 3¼c., f. o. b., and Soiled Whites are firm at 2¼c., f. o. b.

BAGGING, &c.—The market for all kinds of Bagging is stronger. No sales of No. 1 Gunny are reported, and quotations range from 1⅛@1.20c., 1.10c. having been refused. There is no No. 1 on spot. No. 1 Mixed Bagging is doing better, and ranges 85@90c., with 80c. refused. No. 1 Bright Burlaps are quoted at 1.20@1.25c., with 50 tons sold at 1.20c., the outside quotation being most general at the close. Burlap Bagging is quoted at 1@1¼c., with 50 tons sold within the range. Wool tares have been sold this week at 1.20 and 1¼c., the outside figure being the quotation at the close. In Manilla Rope there have been sales of 25 tons "Star" at 1.85c, and of "Wooden Tag" at 1.95c. Manilla imports for the week aggregated 1,541 balesbeing 58 bs. from Glasgow, 994 bs. from Liverpool and 489 bs. from London.

OLD PAPERS.—There is a very fair call for old papers and prices are very regular. We quote: No. 1 Hard White Shavings, 2½@2⅝c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1⅞@2c.; Old Ledgers, 2c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1@1⅛c.; Mixed Shavings, No. 2, ¼c.; Extra No. 1 Manillas, .90c.; No. 1 Manillas, ordinary, .75c.; No. 2 Manillas, .60c.; Light Book Stock, .60c.; Folded News, .35c.; Mixed Papers, .35c.; Commons, .25@.30c.; Straw Clippings, .45c.; Binders' do., .45c.

STRAW.—The market is quiet. We quote: Long Rye at 50@55c.; Short Rye at 40@45c.; Wheat at 40@45c.; Oat at 35@45c.

ROSINS.—The market is without feature, but prices are steady. We quote: Common to Good Strained, $1.35½@1.42½; E, $1.55; F, $1.80; G, $1.90; H, $2; I, $2.25@2.30; K, $2.55@2.60; M, $2.80@$2.85; N, $3@$3.05; W G, $3.25@3.30.

CHEMICALS.—There is a moderate trade in paper makers' chemicals. Under date of August 14. J. P. Brunner & Co. speak of the Liverpool market, as follows: "The report of the passing of the tariff bill at your side has caused a more cheerful feeling here, and it is hoped there will be some revival in trade generally, in which chemicals will have a share, but at the same time it is too early yet to say what the effect will really be. At present there is practically no change to report as to the chemical market here. Soda ash continues dull for Leblanc makes, and nominal spot range is about as follows: Caustic ash, 48 per cent., £3 15s.@4 per ton; 57–58 per cent., £4 10s.@4 15s. per ton, net cash. Carb. Ash. 48 per cent., £3 5s.@3 15s. per ton; 58 per cent., £3 15s.@£4 per ton, net cash. Ammonia Ash. 58 per cent., in better request at £3 10s.@3 15s. per ton, net cash, for tierces. and 5s. per ton less for bags. Soda Crystals are without improvement at £2 12s. 6d.@2 15s. per ton, less 5 per cent. Caustic Soda flat and very little doing. We quote spot range as to market about as follows: Sixty per cent., £7 5s.@8 per ton; 70 per cent., £8 5s @9 per ton; 74 per cent., £9 5s.@10 per ton; 76 per cent., £10 5s.@11 per ton, net cash. For parcels under 10 tons 5 per cent. extra is charged. Bleaching Powder inactive at £7 10s.@8 per ton, net cash, for hardwood packages, according to destination." The cancellation of contracts and the witholding of shipments has reduced arrivals of Bleach very materially, and the spot stock is very limited, and the price on spot is firm at 1⅞c. Sal Soda is in better demand, Caustic Soda is without change, and Alkali is in better business for shipment. During the week there have been sales 25 cks. Bleach at 1⅞c.; 25 tons Soda Ash at 1¼c.; 50 tons 58 per cent. Alkali at 1@1⅛c.; 25 drums Caustic at 2.72½c.

CHINA CLAY.—A better feeling, caused by demand for goods, is noticeable in this specialty. We hear reported to us quite heavy sales of recent date for future delivery. Prices are named at $13@$18, according to quantity.

TWINES.—There is a better business in progress. We quote: Sisal Hay Rope, 5@6c.; Sisal Lath Yarn, fine, 9¼c. and medium, 9c.; Jute Lines, 7½c.; Jute Ready, 7@7½c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¾c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c., Russian Hemp Hay Rope, 9c.

COAL.—In Bituminous coal a large and increasing tonnage is being turned out. At all of the districts there seems to be the greatest effort to push forward the quantity, so as to regain if possible the statistical position before the close of the season. The period of the strike represented just so much of the time usually lost in the course of the year, and it may be that there will be no more idle days during 1894. The usual customers are being supplied quite rapidly, and there will be before long nothing except the stocking places to look to as a receptacle for the coal which is being mined.

EDWIN BUTTERWORTH & CO.
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing
Wood Pulp, Moist and Air Dry Pulp,
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Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.94
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7½
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ℔ ream	1.10	@	1.35
Tissues, black, 20×30, ℔ ream	1.40	@	1.50
White tissue, 20×30, ℔ ream	.85	@	1.00
White tissue, 24×36, ℔ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	8
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¼	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2½	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ℔ ton, No. 1	70.00	@	90.00
Binders' Boards, ℔ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ℔ ton	47.50	@	....
Strawboards, steam dried, No. 1, ℔ ton f. o. b. mill	....	@	24.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ℔ rm	85	@	....
30×40, from 30 to 34 lbs. ℔ rm	....	@	72
24×36, from 24 to 26 lbs. ℔ rm	....	@	60
22×32, from 24 to 26 lbs. ℔ rm	56	@	....
20×30, 21 lbs., ℔ rm	....	@	44
20×30, from 14 to 17 lbs. ℔ rm	36	@	....
16×22, from 12 to 13 lbs. ℔ rm	28	@	....
18×28	....	@	32
15×20, 10 lbs. ℔ rm	17	@	19
15×20, from 7 to 8½ lbs. ℔ rm	17	@	19
14×18	....	@	15
12×16	....	@	13
11×15	....	@	11
Straw Wrapping, ℔ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ℔ lb., light weight	1½	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12x18	18	@	20
14x20	22	@	....
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	6	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	5½	@	6
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4	@	4¼
City Whites, No. 1	3¾	@	....
New Seconds, light	2½	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	⅛	@	1.15
Cotton Canvas, No. 1	3½	@	....
Linen Canvas, No. 1	....	@	2
Country Mixed, free of Woolens	60	@	75
Seconds (City)	30	@	50
Colors, ℔ 100 lbs	30	@	40
Manilla Rope	2	@	2¼
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	....	@	1¾
Mixed Bagging, No. 1	80	@	90
Burlap Bagging, No. 1	....	@	1¾
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	2½	@	....
Jute Waste	⅛	@	1

Hamburg Rags, &c.

N S C, New Shirt Cuttings	....	@	6
S P F F, No. 1 Linens	....	@	5
S P F F, No. 2 Linens	....	@	4½
S P F, No. 3 Linens	....	@	3
F G, No. 4 Linens	....	@	2¾
F F, No. 5 Linens	2	@	....
Extra Fine Blue Linen, light color	2¾	@	....
L F B, Blue Linens	2½	@	....
C S P F F-F, No 1 Cottons	....	@	4
C S P F F, No. 2 Cottons	....	@	3½
C S P F, No. 3 Cottons	2½	@	....
C C C, Colored Cottons	....	@	1
C F X, Low grade Cottons	⅞	@	1
Extra Fine Blue Cottons	....	@	1¾

Chemicals, Coloring Materials, &c.

Alkali, 58 ℔ cent	1	@	1.30
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2½
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¾
Anti-Chlorine	....	@	2¾
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	2	@	2¼
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ℔ cent	2.70	@	2.80½
Clay, China, English, ℔ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ℔ ton	9.50	@	10.00
Clay, Terra Alba, French, ℔ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3¼
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	25
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ℔ bbl	1.50	@	1.57½
Rosins, E, ℔ bbl	....	@	1.70
Rosins, F, ℔ bbl	1.85	@	....
Rosins, G, ℔ bbl	1.97½	@	....
Rosins, H, ℔ bbl	2.25	@	2.30
Rosins, I, ℔ bbl	2.55	@	....
Rosins, K, ℔ bbl	2.75	@	....
Rosins, M, ℔ bbl	3.00	@	....
Rosins, N, ℔ bbl	3.30	@	....
Rosins, W G, ℔ bbl	....	@	3.35
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ℔ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ℔ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2¼
Sulphuric Acid, 66° cent	1	@	1½
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

BOSTON MARKET.

Paper Stock.

White Rags, No. 1	3¼	@	3½
No. 2 Whites	2	@	2¾
Common Seconds	2	@	2¼
Thirds and Blues	1	@	1.30
Southern Mixed Rags	80	@	1
Colors, country	½	@	¾
Colors, city	25	@	30
New Calicoes, light	2	@	2½
New Calicoes, dark	1¾	@	1¾
Shirt Cuttings, best	4¾	@	5
Shirt Cuttings, good	4	@	4¼
Shirt Cuttings, unbleached	3¾	@	4
Shirt Cuttings, unbleached No. 2	2½	@	3
Shirt Cuttings, cheviots	2¾	@	3
Overall Cuttings, blue	2¾	@	3
Overall Cuttings, brown	2	@	2¼
Shoe Rags, bleached	3¾	@	4
Shoe Rags, unbleached	3¾	@	3¾
Shoe Rags, brown	3	@	3½
Cotton Flannels, bleached	3¾	@	4
Cotton Flannels, unbleached	3½	@	3¾
Corset Rags, drab	3½	@	3¾
Corset Rags, white	4	@	4½
Tailors' Seconds	1¾	@	1¾
Tailors' Colors	25	@	30
Cotton Canvas	3	@	3¼
Cotton Canvas, No. 2	1½	@	1¾
Linen Canvas	1½	@	2
New Canvas Cutting	4	@	4¼
Insole Canvas	3	@	3½
Print Papers, best	30	@	35
Print Papers, ordinary	25	@	....
Folded News	32½	@	35
Old Waste Papers	30	@	32½
Manilla Paper, No. 1	....	@	1.35
Manilla Paper, good mixed	85	@	90
Manilla Paper, blues	65	@	75
Mixed Book Stock	95	@	1
Books and Pamphlets	1¾	@	1¾
Book Stock, light	70	@	75
Ledgers and Letters	1.90	@	2
Soft Book Shavings	1¾	@	2
Hard White Book Shavings	2¾	@	2¾
Leather Board Chips	75	@	85
Straw Chips	35	@	40
Shivey Bagging	1½	@	....
No. 1 Factory Bagging	1	@	....
Burlap Bagging	1.05	@	1.10
Burlap Bagging, large pieces	....	@	2
Kentucky Bagging	....	@	....
Mixed Bagging	¾	@	⅞
No. 2 Bagging	⅝	@	¾
Shakings, soft	½	@	....
Tarred Shakings	1	@	1¼
Standing Rigging	2½	@	2¾
Standing Rigging, foreign	2¼	@	....
Bolt Rope	2	@	2.10
Oakum Junk, No. 2	1½	@	1¾
Tarred Paper Junk	1.15	@	1.20
Tarred Paper Junk, inferior	⅝	@	....
Manilla Rope	1¾	@	2
Tarred Manilla	1½	@	....
Hemp Strings	1¾	@	2
Sisal Strings	....	@	1.10
Wool Strings	90	@	1.10
Flax Tow	¾	@	1
Flax Waste	¾	@	1

New Papers.

Superfine Book	6	@	7
Fine Book	5½	@	6
News, rag and wood	3	@	....
Manilla, Cream Rope	9½	@	10
Manilla, No. 1, Rope	7½	@	8½
Manilla, Extra Jute	5½	@	6
Manilla, Jute and Gunny	5½	@	6
Manilla, No. 2	4	@	4½
Manilla, Bogus	2	@	3
Hardware, No. 1, tarred	7½	@	8½
Hardware, No. 2	6½	@	7
Hardware, red	4½	@	5½
Strawboards, air dried, ℔ ton	37½	@	45.00
Strawboards, steam dried, ℔ ton	30.00	@	35.00
Straw Wrapping, heavy	1.90	@	2¼
Straw Wrapping, light	2¼	@	2½
Binders' Boards, ℔ ton	45.00	@	50.00
Leather Board, Common, ℔ lb	3	@	4
Leather Board, counter	5	@	8
Leather Board, extra	8	@	10
Tar Boards, ℔ ton	100.00	@	110.00

Chemicals.

Alkali	90	@	1
Aluminous Cake, currency	1¾	@	1¾
Alum, American ground	....	@	1.95
Alum, American lump	....	@	1.85
Anti-Chlorine	2	@	2½
Bichromate Potash	9	@	9½
Bleaching Powders	1¾	@	1⅞
Caustic Soda, 74 ℔ cent	....	@	2.65
Clay, English, ℔ ton	14.00	@	18.00
Clay, American, ℔ ton	10.00	@	11.00
Copperas, ℔ lb	65	@	75
Extract Logwood	5½	@	10½
Lime, Rockland, ℔ bbl	85	@	90
Prussian Blue, ℔ lb	32	@	35
Prussiate Potash, yellow	24½	@	25
Prussiate Potash, red	38	@	38½
Rosin, common strained, ℔ bbl	1.90	@	2.50
Rosin, Medium	2.20	@	3.00
Rosin, extra pale, ℔ bbl	3.00	@	4.50
Sal Soda, ℔ lb	85	@	89½
Soda Ash, 48 ℔ cent. caustic	1.40	@	1.60
Soda Ash, 48 ℔ cent. carbonated	1.37	@	1.50
Soluble Blue	2.50	@	3.50
Sugar Lead, white	11	@	12
Sugar Lead, brown	5½	@	6
Sulphuric Acid, 66°	¾	@	1¼
Terra Alba, ℔ ton	9.00	@	15.00
Ultramarine, ℔ lb	7	@	25
Venetian Red, ℔ lb	70	@	2¼
Vitriol, Blue	3½	@	3¾
Yellow Ochre	½	@	1

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

WANTED—SALESMAN FOR PAPER STOCK and wood pulp, to reside at Holyoke. Address, giving particulars, IMPORTER, care Journal.

WANTED—SITUATION AS CORRESPONDent and translator by lady typewritist, with perfect knowledge of the English, French, German and Italian languages. Address TYPEWRITIST, care The Journal.

PRACTICAL PAPER MAKER, MANY YEARS' experience, desires situation as superintendent or foreman; used to book, news, manillas, colors and making ground wood pulp. B. M., care Journal.

WANTED—AN EXPERIENCED BEATERMAN in soda, pulp and rag stock; book, fine writings and colors made; must be steady and sober; a good position for the right man; also a man to take charge and full control of finishing room who understands the working and care of supercalenders and cutters and keeping stock; good wages given to the right man. Address, giving reference, P. K., care Paper Trade Journal.

WANTED—FIRST-CLASS SUPERINTENDent for two machine mill making book and writing papers. Address the undersigned, R. O., care of the Paper Trade Journal.

WANTED—SITUATION BY EXPERIENCED superintendent; familiar with manufacture of writing, book, news, manilla and colors, soda and mechanical pulps; first-class references. G. S., care Journal.

AGENT WANTED WITH GOOD CONNECtion among paper makers to represent a British firm who are makers of paper machine wires and dandy rolls; first-class references given and required. Address WIRES, care of T. B. Browne's Advertising Offices, 353 Canal street, New York, U. S. A.

WANTED—SITUATION AS SUPERINTENDent; have had fifteen years' experience on manilla, colored tissue and copying paper; understands coloring thoroughly. Address W. H., care Journal.

WANTED—GOOD PAPER MAKER TO BUY new mill in New York State; can get possession with little money. I. S. DILLINGHAM, 67 Federal street, Boston.

SITUATIONS WANTED BY FIRST-CLASS superintendents, machine tenders and engineers; worked on all grades of paper; both slow and fast running machines; can furnish best references if required. Apply to EAGLE LODGE No. 1, Brotherhood of Paper Makers, Box 672, Holyoke, Mass.

TO RENT—A FRONT ROOM, CONTAINING about 550 square feet of floor space, first loft, in building occupied by The Lockwood Press, on the southwest corner of Duane and Church Streets. Apply to HOWARD LOCKWOOD & CO., on the premises.

FOR SALE—SIX CLEVELAND GRINDSTONES, 18x48, for Mills grinder. Address CLIFF PAPER CO., Niagara Falls, N. Y.

FOR SALE—A SECOND-HAND COPY OF HOFmann's Treatise on Paper Making in good condition for sale cheap. For further particulars address URGENT, care Paper Trade Journal.

FOR SALE.

Two second-hand Jordans.
One Marshall Engine.
Two Rotaries, 6 x 20 ft.
Two Daniels Rag Cutters.
Two Revolving Paper Cutters.
All guaranteed in good condition; nearly new.
NOBLE & FOSS MACHINE CO.,
Hoosick Falls, N. Y.

FOR SALE, Pyrites Mine,

in paper making district in New England States; 1,000 feet from line of railway; yields 42 to 52 per cent. sulphur; vein inexhaustible; machinery in place to hoist 50 tons per day; can be mined for $1.50 per ton; will sell whole or half interest; would take stock in satisfactory company as part payment. Address PYRITES, care Paper Trade Journal.

FOR SALE.

A set of six 88 inch revolving reels, new, our make, with heavy frames, gears, tension wheels, endwise adjustment, driven by weighted friction, a power rotating attachment and a reel turning device.
THE BLACK & CLAWSON CO.,
Hamilton, Ohio.

FOR SALE.

Four 1,000 pound Umpherston Beating Engines, complete, with patent copper washers, sand traps, &c. Engines in first-class condition and now running, but to be taken out to make room for other machinery. Address UMPHERSTON,
care of Paper Trade Journal.

A FINE OPPORTUNITY
TO GO INTO BUSINESS.

To a company that understand the coating business an offer will be made to furnish a fully equipped plant, ample room with plenty of power. Well situated for future business. Will either lease plant or take an interest in the business. Parties answering advertisement must be in position to furnish all necessary capital to buy stock and carry accounts.
Address A. B. C., care of Journal Office.

TO LEASE.

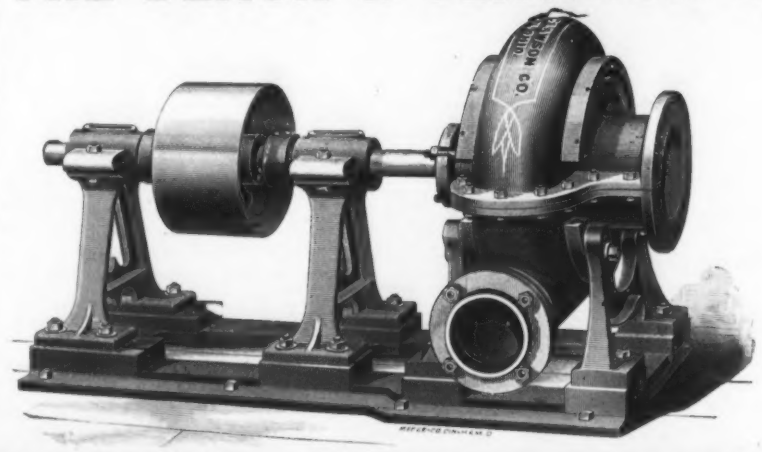
The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1894. C. F. HANMER, Secretary.

NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

THE BLACK & CLAWSON CO., MANUFACTURERS OF Paper Mill Machinery,



FOURDRINIER,
HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.
JORDAN ENGINES.
Jordan Engines Refilled.

Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.

REVOLVING REELS AND STACK REELS.

FOR PARTICULARS ADDRESS
THE BLACK & CLAWSON CO., Hamilton, Ohio.

WE MAKE THE ONLY PERFECT DRYER.

MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

PAPER MILL MACHINERY.

One 84 inch Fourdrinier part to paper machine complete, with Gould screen.
One 74 inch Fourdrinier machine complete, Gould screen; gun metal press rolls, 15x75 inches; eight iron dryers, 36x72 inches; stack of nine chilled rolls, 72 inch face; upright reel and cone pulley cutter; Bess slitters.
One Gould screen, eight plates, 10x36 inches.
One Gould screen, eight plates, 12x40 inches.
One Barber's suction.
One 70 inch machine complete, Gould screen, Fourdrinier wire, 70x33 inches; first and second presses; eight iron dryers, 36x65¾ inches; stack five chilled rolls, four 12 inches, one 16x64 inches face; upright reel, slitter and winder.
Two new 1,000 pound Holyoke Machine Co. beaters, wood tubs.
One 1,000 pound iron tub beater.
Six beating engines, 36 inch roll, iron tubs.
One 1,200 pound Horne patent engine, new.
One rotary, 7x20, double riveted, 9-16 inch shell.
Three Sheaff & Roberts hydraulic pulp grinders.
Three Jordan engines.
Two rag cutters and duster.
Four iron dryers, 28x72 inches.
Send for catalogue of machinery, steam engines and boilers.
1,000 feet shafting, 2 to 6 inches diameter; 500 feet belting, 5 to 48 inches wide.
Parties wanting tools, stock or machinery used in a paper or pulp mill can find it here at a bargain.
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PROVIDENCE STATIONERY CO.

WHOLESALE DEALERS IN
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—THE—
Cedar Point Foundry,

PORT HENRY, N. Y.

WOOD PULP GRINDERS,
WET MACHINES,
Jeffers Suction Screen,

Made in three sizes: Eight, Nine and Ten Plates.

SEND FOR BLUE PRINTS.

Don't Guess at Important Matters.

Bowsher's SPEED or MOTION INDICATOR IS INDISPENSABLE
In obtaining a UNIFORM speed of machinery, and is one of the most PROFITABLE little devices ever put in a mill. Will pay for itself in 30 days. Dial 12 in. in diameter. Weight 10 pounds.
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ESTABLISHED 1840.
GEO. J. BURKHARDT'S SONS'
Cedar Tank Factory,
2831 TO 2839 NORTH BROAD ST.,
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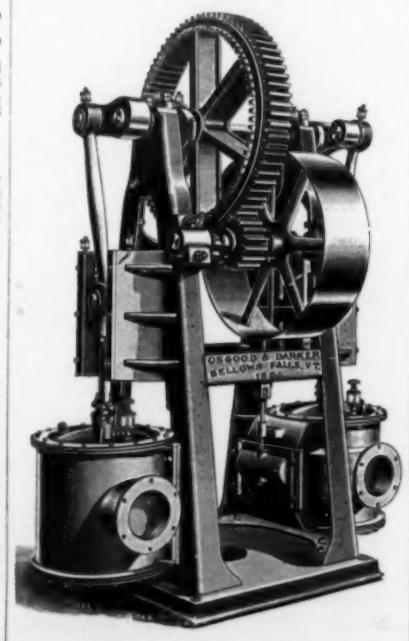
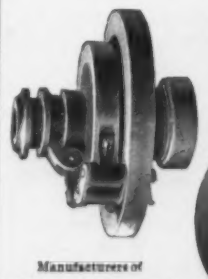


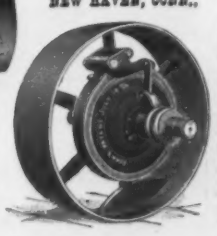
VACUUM PUMP.
Weight, Four Tons.

MANUFACTURED BY
OSGOOD & BARKER,
Bellows Falls, Vt.,

MANUFACTURERS OF
Sulphur Burners,
Acid Pumps,
Barkers,
Chippers,
FOR SULPHITE PLANTS.
Fourdrinier and Cylinder Paper Machines,
With one, two, three or four stacks of dryers.
Upright Reels, with two or three Drums,
Reel Stacks and Revolving Reels,
Rewinding and Slitting Machines,
Calender Buffing Machines
For buffing ends of the rolls.
Ground Wood Pulp Machines,
Wet Machines.
Pulp and Paper Machinery
For all kinds of Paper.

WRITE FOR DESCRIPTIONS AND PRICES.





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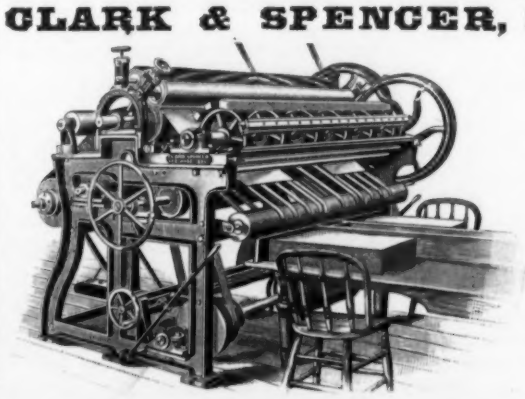
NEW HAVEN, CONN.,
Manufacturers of
Friction Pulleys and Cut-off Couplings.

CLARK & SPENCER, LEE, MASS.



Revolving Paper Cutters,
Rag Cutters,
Cylinder Machines,
Washing and Beating Engines,
Chilled Iron Calenders,
Fan and Stuff Pumps,
Engine Roll Bars.

DO YOU WANT A . .
RAG CUTTER,
TO CUT ROPE, JUTE BUTTS, BAGGING, OR ROOFING PAPER STOCK?
IF SO, WRITE TO
TAYLOR, STILES & CO.,
RIEGELSVILLE, N. J.

ORGANIZED JULY 1, 1889. CAPITAL, $3,000,000.
AMERICAN STRAW BOARD CO.

Manufacturers of Straw Boards, Pulp Lined Boards, Lined Straw Boards, Combination Boards, Binders' Boards,
"LIGNISTRA." Friction Boards, Building Board, Plain Board, Tarred Board, Waterproof Boards, Barrel Layers, Peach Baskets, Egg Cases and Fillers.
General Office, PULLMAN BUILDING, CHICAGO.
AGENCIES: New York, 102, 104, 106 Wooster St. Boston, 46 Federal St. Philadelphia, 121-127 N. Fourth St. Cincinnati, 101-103 Walnut St. Chicago, 152-153 Michigan Ave.

RIVERSIDE PAPER CO., HOLYOKE, MASS. — "MAGNA CHARTA" BOND, "PURE LINEN STOCK" LINENS (WHITE WOVE AND CREAM LAID), "DUNDEE RECORD" LEDGERS.

FRANKLIN PAPER CO., HOLYOKE, MASS. — ANIMAL SIZED AND SUPERCALENDERED BRISTOL BOARD, BOX BOARD, DUPLEX AND COVER PAPERS, IN WHITE, TINTS AND COLORS.

ESTABLISHED 1848.
JOHN WALDRON, NEW BRUNSWICK, N. J.,

MANUFACTURER OF ALL STYLES OF
COATING MACHINERY FOR LITHOGRAPH, LABEL, FANCY, GLAZED, BOOK AND SAND PAPERS.
Also Cardboard and Paper Hangings Machinery. Hilbers, Stalb and Waldron Patent Hanging Up Machines. Patent Power Reeling Machines for Coated Papers and Cardboard. Embossing Machines, Paper Rolls, Polishing Machines, &c.
Machinery is universally used by the manufacturers of above goods in the United States and Canada.

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MANUFACTURER OF
BRONZE,
Especially adapted to resist the action of SULPHITE SOLUTIONS in PULP MACHINERY.
COMPOSITION SHELLS A SPECIALTY. | Phosphor Bronze, Brass, Babbitt Metals.

JUDSON & WILLIAMS,

HOLYOKE, MASS.,

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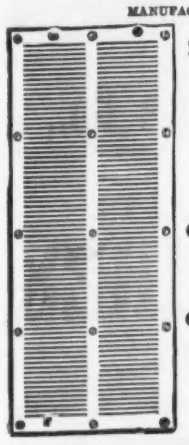

SCREEN PLATES

—OF—

BRASS

—OR—

CAST METAL.

REPAIRING

OLD SCREEN PLATES

A SPECIALTY.

We Do ALL KINDS OF SCREEN PLATE WORK.

OLD PLATES **OVERLAID.**

(PATENTED)

MAIN Office and Works, WESTERN SCREEN PLATE WORKS, APPLETON, WIS., U. S. A. ESTABLISHED 1878.

BRANCH Office and Works, CENTRAL SCREEN PLATE WORKS, NIAGARA FALLS, N. Y. U. S. A. ESTABLISHED 1886.

2

METAL SKYLIGHTS

Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

THE CLOVER LEAF

VENTILATOR

FOR MILLS, FACTORIES AND DYE HOUSES.

Made of galvanized iron or copper. Strong upward draft; exhaust foul air, odors, gases, steam, etc. Perfectly storm-proof. Send for illustrated circular.

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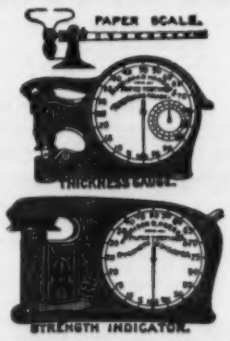
THE MORRISON & HERRON TESTING SYSTEM.

THE MORRISON & HERRON IMPROVED PAPER TESTING MACHINES.



Three Different Machines —FOR— **Strength, Thickness and Weight.**

A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

Price, complete,	$150.00
Or Strength Indicator,	75.00
Thickness Gauge,	75.00
Paper Scale,	20.00

ADDRESS ALL ORDERS TO

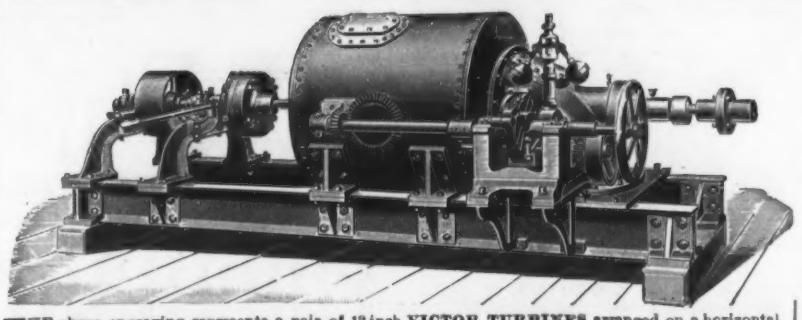
HOWARD L. MORRISON,
1009 Pa. Ave., N. W., Washington, D. C.

CAUTION.

All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

THE VICTOR TURBINE.

UPRIGHT or HORIZONTAL.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines, either single or in pairs, on horizontal shafts, and where the situation admits of their use we recommend them.

In use in a large number of best Paper and Pulp Mills in this and other Countries.

CYLINDER OR REGISTER **GATE.**

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch	18.06	30.17	.8982
17½ inch	17.96	36.35	.8930
20 inch	18.21	45.00	.8532
25 inch	17.90	68.62	.8584
30 inch	11.65	52.54	.8676
35 inch	17.29	133.19	.8497
40 inch	16.49	148.93	.8253
48 inch	15.51	179.29	.8202

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

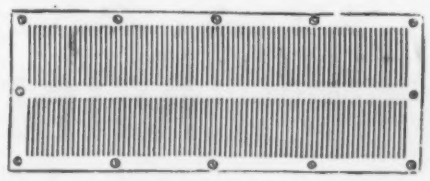
THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

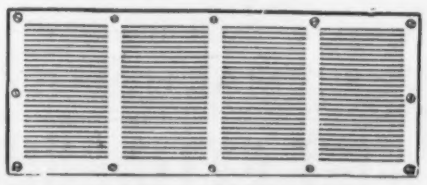
STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO

THE STILWELL-BIERCE & SMITH-VAILE CO., DAYTON, OHIO, U. S. A.

ANNANDALE *Screen Plate Co.,*

PATERSON, N. J.





Manufacturers and Repairers of

SCREEN PLATES.

Our new Plates are made of the **VERY BEST METAL,** and for price and durability cannot be surpassed.

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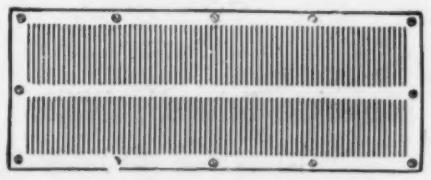
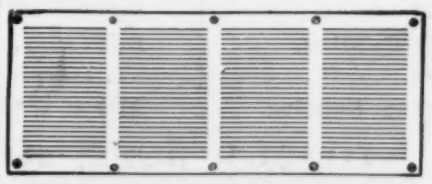
21 Main St., FITCHBURG, MASS.,

MANUFACTURER OF

Screen Plates





OF BRASS OR CAST METAL,

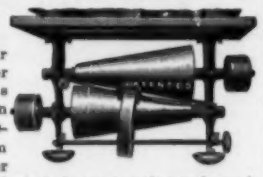
AT PRICES THAT CANNOT BE SURPASSED.

BEST STOCK USED.

Write for Prices and Gauges.

All Work Warranted.

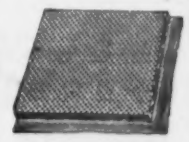
THE EVANS FRICTION CONES



Are running forty-four (44) of the best paper machines in this country and in Europe, transmitting from 20 to 40 horse power each. Thousands of small Cones, hanging and standing, in operation, driving all kinds of machinery. Send for Catalogue "G."

EVANS FRICTION CONE CO., 85 Water St., Boston, Mass.

SAMPLES AND QUOTATIONS FURNISHED UPON APPLICATION.



IMPERIAL ASBESTOS SECTIONAL PIPE AND BOILER COVERING.

Asbestos Prepared Roofings.

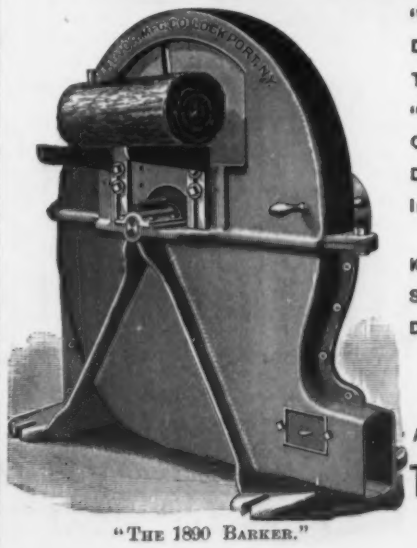
(Specially adapted to Paper Mills).

Chicago, Ill. **H. F. WATSON COMPANY,** Erie, Pa.

TREVOR MANUFACTURING CO., LOCKPORT, N. Y.

MANUFACTURERS OF

IMPROVED WOOD PULP MACHINERY.



"THE 1890 BARKER."

"Niagara" Grinders,
Double and Single Splitters,
The "Trevor" Improved Wet Machines,
"1890" and "Giant" Barkers,
Cross Sawing Machines,
Drag Saw Machines,
Improved Pulp Wood Slabbing and Sawing Machines,
Knot Borers,
Stuff Pumps,
Double and Triple Plunger Pumps, for general use in Pulp and Paper Mills.

Write for Catalogue C and Discounts

Address

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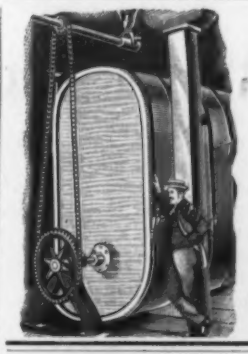


THE SAVAGE PERFECTING STUFF CHEST.

Fits into a narrow space and requires but little power to operate.

It has a double agitating motion, moving the stuff in different directions, which prevents "floating."

It empties itself clean; no waste of stuff and protects from dirt.

Quantity of stuff in chest always shown by indicator.

In writing give space in height, length and breadth if pressed for room; also the amount of stock in dry paper that the chest is wanted to hold.

PATENTED AND MANUFACTURED BY

E. L. SAVAGE, Mechanic Falls, Me.

FOSTER & BROWN, SACCARAPPA, MAINE.

MACHINISTS AND IRON FOUNDERS.

SPECIALTIES:

Improved Paper-Coating Machines; Hanging Machines and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.

THE "WANDEL" Patent Rotary STRAINER

Is the best Screen on the market, and is now used in

148 Paper Mills in Germany.
25 Paper Mills in Austria.
85 Paper Mills in France.
12 Paper Mills in Switzerland.
31 Paper Mills in Italy.
16 Paper Mills in Spain.
26 Paper Mills in England.
9 Paper Mills in Sweden and Norway.
10 Paper Mills in Russia.
And in the Thilmany Pulp and Paper Mills, Kaukauna, Wis.

The "Wandel" Patent Rotary Strainer is delivered ready for use, with or without the bearing frame.

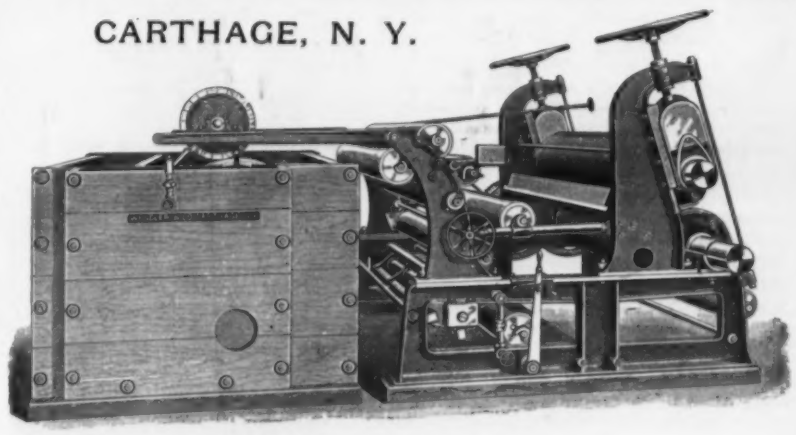
FOR FURTHER PARTICULARS APPLY TO

CHR. WANDEL, Reutlingen, Germany.

Or GEORGE HAMILTON, 74 Wall St., New York.

WENDLER & CO.,

CARTHAGE, N. Y.



STANDARD WET MACHINE.

A Full Line of Centrifugal and Fan Pumps.

ALL MACHINERY AND APPLIANCES USED IN THE MANUFACTURE OF WOOD PULP AND SULPHITE FIBRE.

Manufacturing News.

EASTERN STATES.

After a shut down of nearly a week for repairs, Crane Brothers, Westfield, Mass., started up their lower paper mill on August 23.

The Union Metallic Cartridge Company, Bridgeport, Conn., has placed an order for three large buildings with the Berlin Iron Bridge Company, of East Berlin, Conn.

The Morley Paper Mill and adjoining property, at East Lee, Mass., will be sold under foreclosure of a mortgage held by the Stockbridge Savings Bank on Saturday, September 22.

The Mount Tom Sulphite Pulp Company, Mount Tom, Mass., has put in ten eight plate 12x40 "Gotham" screens, built by the Brownville Iron Works, Brownville, N. Y., this being the fourth order given by the company for "Gotham" screens.

MIDDLE STATES.

Wendler & Co., Carthage, N. Y., have shipped one of their three knife chippers to the Richards Paper Company, South Gardiner, Me.

The Larchmont Electric Company, Mamaroneck, N. Y., has placed the contract for its power station with the Berlin Iron Bridge Company, East Berlin, Conn. The building will be 50 feet wide and 90 feet long.

The Ticonderoga Pulp and Paper Company, Ticonderoga, N. Y., has substituted a Marshall refining engine for the Jordan previously in use.

The Adirondack Water Power and Paper Company, Malone, N. Y., has put in a ten plate 12x40 "Gotham" screen to run on ground wood.

The McDowell Paper Mills, Manayunk, Pa., have substituted their Jordan engines by Marshall's perfecting engines.

The Reading Paper Mills, Reading, Pa., have put in a Marshall refining engine.

The Manayunk Paper Company, Manayunk, Pa., has put in an eight plate 12x40 "Gotham" screen, built by the Brownville Iron Works, Brownville, N. Y.

WESTERN STATES.

The Aqueduct Mills, Dayton, Ohio, have been shut down for repairs and to put in a new boiler.

The Dells Paper and Pulp Mills, Eau Claire, Wis., will be ready to start up again in about six weeks.

The Columbia Straw Paper Company has shut down its mill at Lafayette, Ind.

Jesse and Thomas J. Davis, farmers living near Anderson, Ind., have filed individual suits for damages against the American Strawboard Company to test the legality of allowing the strawboard companies of Indiana to pollute the water of streams by dumping refuse into them. They ask for $5,000 apiece for damages to their farms, which lie adjacent to White River, 3 miles below Anderson.

The fight against the strawboard mills in Indiana for polluting the streams by allowing refuse to be dumped in them is being continued in a forcible manner at Muncie. Isaac G. Boots, J. W. Sinclair and M. L. Fuller, prominent farmers, who own large tracts of land along the Missinewa River below Albany, Ind., where the Albany strawboard works are situated, have entered suit for damages to the extent of $15,000. They claim that their land has been damaged to the extent of $15 per acre, and that the water is unfit for use.

An interesting legal battle is on relative to the possession of the machinery of the Beatrice Paper Mill plant, at Beatrice, Neb. The property was sold about a year ago under sheriff's sale to the Beloit Iron Works. The Beloit Company undertook to remove the machinery at night, on Saturday, August 18, when the Beatrice creditors of the concern got wind of the affair and secured an injunction restraining the Beloit Iron Works from further proceedings in the line of removal. The men paid no attention to the order of the court, and warrants were subsequently issued for the arrest of the foreman and several of his assistants. The Beloit people were subsequently released on bonds. The arrest was made for violation of the Sunday labor law.

N. P. Bowsher, South Bend, Ind., reports a splendid trade during July and August in his "ready dressed" mill cogs, and judges by this that a large amount of repairing and overhauling has been going on. Many new customers have been added to the list and a pleasingly large number of old customers have sent duplicate orders, with expressions of satisfaction with former lots received. Trade in the speed motion indicator has been a little dull, but could have been worse, and he has no complaint to offer.

It is reported that an English syndicate has practically closed a deal for the purchase of all paper and pulp mills in Wisconsin. The mills in the deal number thirty-four, and the price agreed upon is $14,000,000. The transfer, it is said, will be made on March 1. Half the price is to be paid in cash and half in bonds, secured by mortgage. Most of the property involved is located on the Fox River, and fifteen of the mills are at Appleton.

The Dayton Globe Iron Works Company, of Dayton, Ohio, successor to Stout, Mills & Temple, recently shipped the following described machinery to the Falls Manufacturing Company, Oconto Falls, Wis.: One 36 inch, one 30 inch and one 10 inch New American turbines, all in quarter turn iron flumes, mounted on steel I beams; two cast iron tub beating engines, each 1,000 pounds capacity. These are all now being put in position, and will soon be in operation. This power is on the Oconto River, about 200 miles nearly north of Chicago. The fall in the river at this point is 38 feet and affords about 1,500 horse power, all of which will be employed in the manufacture of print paper. The company will be well equipped, as it makes its own ground wood and sulphite fibre. The wood for the pulp is floated to the mill, which, being located on the North Western Railroad, with a side track to the mill, requires no cartage of raw material or manufactured product, so that there is no reason why it should not compete with any paper mill in the country. The founder of this plant, N. H. Brokaw, is president of the company, and is also president of the Kaukauna Fibre Company, Kaukauna, Wis. He is a man of experience in the manufacture of ground wood, sulphite and paper, and is well known to the trade and exceedingly popular, and has the reputation of making a superior article of both ground wood and sulphite, and, above all, is a man of unquestioned integrity. The same concern has also just shipped to the Willamette Pulp and Paper Company, Oregon City, Oregon, two car loads of New American turbines and iron flumes for the enlargement of its plant; also one 66-inch wheel to the Shattuck & Babcock Company, De Pere, Wis., and one 66-inch wheel to the De Pere Electric Light and Power Company, of the same place.

The Deming Company, Salem, Ohio, has engaged in the manufacture of special stuff pumps for paper makers' use.

The Dayton Globe Iron Works Company, Dayton, Ohio, has about completed the shipment of the large contract of turbine wheels, pulp grinders, driving gears, shafting, &c., for the Wolf River Paper and Fibre Company, for that company's new mill at Shawano, Wis., consisting of four No. 1 D. T. Mills pulp grinders, two 30 inch and four 60 inch special New American turbines. The 60 inch wheels are the first of this size of the new line of water wheels now being made by this company from an entirely new line of patterns, and are said to develop more power than any other turbine of the same diameter in the market under equal heads. This new line of turbines has been sent to the Holyoke testing flume and thoroughly tested. From these tests the horse power, quantity of water discharged and revolutions are obtained and tabled in accordance therewith, so there is no question in regard to their accuracy and reliability. Recent tests of these turbines show high efficiency, and will undoubtedly command the favorable attention of all users of water as a motive power. The tests and efficiency of this new line of turbines are set forth in an advertisement in another column of this paper.

SOUTHERN STATES.

The West Virginia Paper Company, Piedmont, W. Va., has put in a new 92 inch three cylinder machine which will be run on drab express papers. This company is also putting in a complete rag plant.

WANTED—IN A MITSCHERLICH SULPHITE mill, a competent all-round practical man who thoroughly understands the machinery and engines connected therewith; none but those having such experience need apply. Address, stating age, qualifications, references and salary expected, W. P. C., Paper Trade Journal.

THE "Hamilton" Felt.

"Best and Most Economical Made."

WISE PAPER MAKERS

don't always want to buy high priced imported Felts, nor do they want to experiment with inferior grades of domestic ones. The "Hamilton" answers their requirements in every respect.

In ordering mention kind of stock used, quality of paper made and speed of machine.

Shuler & Benninghofen, Hamilton, Ohio.

The W. S. Tyler Wire Works Co.,

CLEVELAND, OHIO.

MANUFACTURERS OF

FOURDRINIER WIRES,

Cylinder Faces and Washer Wires.

The American Talc Co.,

MANUFACTURERS OF A

SUPERIOR QUALITY OF MINERAL PULP OF ALL GRADES,

PROVIDENCE, R. I.

MINES AND MILL: FOWLER, N. Y. NEW YORK OFFICE: ROOM 23 PARA BUILDING, 35 WARREN ST. TELEGRAPH ADDRESS: GOUVERNEUR, N. Y.

NEW MILL. LATEST MACHINERY. STEAM POWER.

THE GENERAL FIRE EXTINGUISHER COMPANY,

CONTROLLING THE INVENTIONS AND APPARATUS PERTAINING TO AUTOMATIC SPRINKLERS OF

Frederick Grinnell, William Neracher, John Hill, William Kane and others.

INFORMATION AND PROPOSALS FURNISHED AT THE SEVERAL DEPARTMENT AGENCIES, NAMELY:

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PHILADELPHIA: Mutual Life Building.
CHICAGO: 226 La Salle Street.
CLEVELAND: Society for Savings Building.
BOSTON: 173 Devonshire Street.
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ST. LOUIS: 710 Odd Fellows Building.
Also at WARREN, OHIO, and COLUMBUS, GA.

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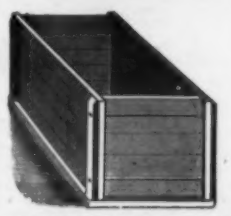
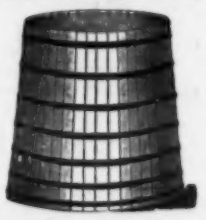
EXECUTIVE OFFICES, PROVIDENCE, R. I.



GEO. WOOLFORD, Manufacturer of all kinds of CEDAR TUBS FOR PAPER MILL WORK, DRAINERS, STUFF CHESTS, WATER TANKS, &c.

In sending for estimates state if measurements are inside or outside and thickness of wood desired.

2240-42-44-46-48 North Ninth St., PHILADELPHIA, PA.



CHAS. B. PRIDE, APPLETON, WIS.

Mill Architect and Contractor.

Specialties: PAPER MILLS AND SULPHITE FIBRE MILLS.

Plans Furnished and Mills Constructed on shortest possible notice.

CHRISTIANA MACHINE CO.,

Christiana, Pa.,

MANUFACTURERS OF

THE BALANCED GATE Turbine Wheel.

Suitable for Light or Heavy Service.

Globe Outer-Cases and Special Wrought or Cast Iron Flumes,

SUITABLE FOR ANY SITUATION.

GEARING of all kinds, SHAFTING, PULLEYS and everything required for a complete POWER PLANT.

Satisfaction Guaranteed. Designs and Estimates furnished on application. Send for Catalogue.

WESTERN NEW YORK MANUFACTURING CO., Tonawanda, N. Y.,

MANUFACTURERS OF

Mineral Asphalt Roofing . .

—FROM—

. . Pure Trinidad Asphalt.

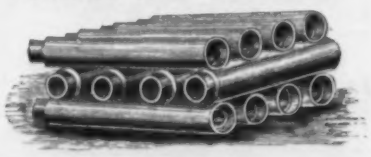
FIREPROOF. PLIABLE AND DURABLE.

—ALSO—

WOODEN WATER PIPE

(WICKOFF PATENT),

Made to stand any test from 20 to 160 lbs. per square inch.



Noble & Foss Machine Co.,

Aloosick Falls, N. Y.,

Manufacturers of

Paper Mill Machinery.

Jordan & Beating Engines.

Iron or Wood Tubs, Laid or Steel Bars and Knives. Bed Plates and Jordan Fillings of every description a specialty. Correspondence solicited.

Obituary.

CHARLES HALLETT.

Charles Hallett died at his home in Riverhead, L. I., on August 29 from heart disease. He was for a number of years engaged in the manufacture of paper, having a mill at Riverhead, N. Y., but retired from the business a few years ago. Mr. Hallett was about fifty-seven years of age, of genial personality, much esteemed by those who knew him, and probably the leading business man at the east end of Long Island.

William C. Howells, father of the novelist, W. D. Howells, died at Jefferson, Ohio, on August 28, at the age of eighty-eight years. Mr. Howells was for twenty-five years editor of the *Sentinel*, Ashtabula, Ohio, and for ten years held a similar position on the *Intelligencer*, Hamilton, Ohio. He served a term in the Ohio State Senate, and for a number of years represented his country as consul, first at Quebec, and later at Toronto, Canada.

Charles Pierre Goldey, business manager of *Turf, Field and Farm*, died of nervous prostration at the home of his father in Brooklyn on Saturday, August 25, at the age of thirty-four years.

C. B. C. Doherty, publisher, Michigan City, N. Dak., is dead.

The Late Col. James H. Platt.

Col. James H. Platt, who died as the result of an accident at Green Lake, Col., on August 12, has made provision for his family in the shape of policies of life insurance to the amount of $150,000.

At meetings of the boards of directors of the Denver Paper Mill Company and the Platte River Paper Mills Company resolutions of encomium of the deceased and regret for his death were adopted.

Accidents.

Patrick Walsh, forty-five years old, foreman in the Franklin Paper Mill, at Willow avenue and Eighth street, Hoboken, N. J., while repairing machinery on August 27 was caught by the belt of the big flywheel. The wheel was making 1,600 revolutions a minute. Walsh was whirled up to the ceiling and his head struck against a beam. The space between the wheel and the ceiling was too small to permit him to pass, and he was torn away from the belt and fell into the pit. An ambulance was summoned from St. Mary's Hospital, but before it reached the mill Walsh was dead.

Robert H. Lowery, an employee in the Lock Haven Mills, Lock Haven, Pa., was severely burned on August 23. Mr. Lowery, while engaged in performing his duties in the liquor house, slipped off one of the narrow plank passages into a vat full of liquor. He had the presence of mind to keep his mouth tightly closed until he succeeded in climbing out of the vat. He then called for assistance, and the other employees soon responded. His clothing and shoes were quickly taken off, and he was placed in as comfortable a position as could be made under the circumstances. Some parts of his body were badly burned, but he escaped very well.

General Notes.

An advertisement for a salesman in the paper stock line will be found in another column of this issue of THE PAPER TRADE JOURNAL.

A new belt fastener is described as made of metal, and consisting of two small ribbed plates connected by a narrow band of pliable metal, which gives freely on any size of pulley.

It is reported that the Scott Paper Company, Limited, Philadelphia, Pa., disavows the reported discharge of employees for their attention to duty in the National Guard, and says that it is not antagonistic to the military organization of the State.

The Deming Company, Salem, Ohio, manufactures a line of pumps specially designed for use in paper mills. Its triplex stuff pump takes less than half of the power required for single or double plunger pumps and is made of the best materials. The suction pump made by the company gives adequate vacuum at all times and can be easily kept in perfect condition.

The assets and liabilities of the Fairchild Paper Company, Pepperell, Mass., are as follows: Liabilities—Merchandise creditors, $66,127; banks, $135,000; Charles Fairchild, $125,000; total, $326,127. Assets—Cash, notes and accounts due before October 1, $18,483; good notes and accounts, $2,800; doubtful notes, face value, $3,933; bonds Nashua River Paper Company, $230,000; total, $255,216, besides $82,000 stock of the Nashua River Paper Company. The banks will take $135,000 of the bonds, the merchandise creditors $48,000 of bonds and $18,000 cash, and Colonel Fairchild $47,000 of the bonds.

The committee on membership of the American Paper Manufacturers' Association held a meeting on Thursday at the offices of W. H. Parsons & Co., W. H. Parsons presiding. It was decided to issue a circular letter to all manufacturers as to the work of the association. It was reported that already about fifty new members had been enrolled. There was an informal discussion of various matters affecting the good of the association, after which the committee adjourned to meet at an early day, to be fixed by the chairman.

The Dayton Globe Iron Works Company, successor to Stout, Mills & Temple, Dayton, Ohio, U. S. A., has for some time been making and testing at the Holyoke testing flume, Holyoke, Mass., a new line of its New American turbine water wheels, greatly increasing the capacity of each diameter. Recent tests of a 45 inch and 42 inch wheel are said to have reached a higher average efficiency from whole to half water than any two turbines previously made by any other turbine builder. These tests show that the New American is remarkable for efficiency. High efficiency at whole water and low efficiency at part water does not constitute a first-class turbine, as it is unpractical to properly operate any kind of machinery without reserve power. A margin must be left for emergencies and for fluctuation of head. The construction of the New American is such that the highest efficiency is obtained at seven-eighths to three-quarters water, as seen by the following, copied from the official report:

TEST OF A 45 INCH NEW AMERICAN TURBINE, TESTED JULY 9, 1894.

	Per cent.
Whole gate (meaning whole water)..	79.76
⅞ " " " ..	82.58
¾ " " " ..	82.18
⅝ " " " ..	79.31
½ " " " ..	75.52

Average efficiency from whole to half water, 79.87 per cent.

TEST OF A 42 INCH NEW AMERICAN TURBINE, TESTED JULY 14, 1894.

	Per cent.
Whole gate (meaning whole water)..	80.50
⅞ " " " ..	83.09
¾ " " " ..	82.77
⅝ " " " ..	79.21
½ " " " ..	70.60

Average efficiency from whole to half water, 79.25 per cent.

In Town.

G. C. Sherman, Watertown, N. Y.; C. W. Rantoul, Boston, Mass.; Wellington Smith, Lee, Mass.; Alex. Robertson, Montville, Conn.

Elasticity of Machinery.

There is no more important truth for owners of machinery than the fact that there is no such thing as complete rigidity in anything, and that in proportion as machinery is worked up to its full capacity (and often long before), the various parts begin to spring, and rapid deterioration takes piace. Mill owners in India are beginning to realize why iron or steel floor framings are better than timber, quite independently of price or risk of fire, by observing that their machines run more easily and wear longer, on account of the superior rigidity of the metallic framing over beams of wood, which settle somewhat every year. Some remarks on this subject which have appeared in *Machinery*, are given below in full:

"One of the things that most machinists have to learn is that they are not working with materials that are really 'unyielding,' as iron and steel are commonly considered to be, but with materials that yield readily to every strain imposed upon them. It is far too common when shaping parts of machinery, or when erecting machines, to impose strains of various kinds upon them, and assume that they do not change form on account of those strains. Instead of this it should be more fully realized that in every case there is a change of form, depending upon the character and amount of strain; and whether or not this change of form will be prejudicial should be considered. A cast beam, specially designed for extreme rigidity, will yield readily to a small transverse strain, as is perhaps best shown by bench measuring machines, in which, though the bed of the machine may be what we call extremely rigid, yet a small lifting force applied to one end of it produces a very perceptible effect in the way of bringing the contact points together—an effect which is readily perceived by the present refined method of measuring.

"One of the most vivid proofs of the extreme elasticity of steel is afforded by a very interesting experiment made by a firm of engineers recently. Three cylindrical posts, 1½ inches diameter and 10 feet long, were placed in a vertical position upon a steel disk, and arrangements were made by which a pound weight could be very carefully placed upon or removed from the upper disk. An electrical contact was arranged in such a manner that any diminution of length of the columns would cause a bell to ring. It was found that this pound weight was sufficient to make and break the contact, the bell continuing to ring so long as the weight was in place, and stopping whenever it was removed. By experiments made upon specimens of the same bar of steel, and by calculation, it was determined that the steel bars were compressed 1-14,000,000 of an inch, which, it is true, is a very small amount, but then 1 pound is a very small load for steel posts capable of supporting over 200,000 pounds without permanent deformation—*i. e.*, within the elastic limit of the material—and the experiment shows that even the lightest strain cannot be imposed upon the materials we handle without a corresponding yielding; which yielding may or may not be disregarded, according to circumstances.

"To this fact, that metals always yield under strain, is undoubtedly due much of the 'wearing to a bearing' that is often considered necessary in new machinery. Machine spindles ground and lapped accurately to a bearing, while unloaded and subjected to no strain, may not be to a bearing when loaded and in operation, especially subjected to transverse strain. Engine crank shafts deflect by the load of the fly wheel and other strains put upon them. Surfaces scraped to a surface plate are no longer true when differently loaded, or when the weight of the machine itself is allowed to produce distortion."

Light machinery, like spinning frames which are bolted together, may be screwed up too hard, a fact that is not known to a great many fitters, and the contact surfaces which were most carefully adjusted in the manufacturers' workshop, may lose all their merit on account of a little dirt which has got unobserved between them. In carding machinery, where accurate adjustment is of the highest importance, the designer does his best to provide as much as possible against careless fitting up, but he cannot do everything. If the dynamometer were used on every newly erected machine to test the accuracy of its fitting before being allowed to do work, there would be much less bad erection. This is only a small part of the system of testing and verifying everything about a manufactory, and which is one of the chief secrets of economy of production.

Legal Decisions.

[SPECIALLY REPORTED FOR THE PAPER TRADE JOURNAL.]

Effect of Deposit in Insolvent Bank.—A deposit made in the usual course of business vests in the bank, and cannot be recovered by the depositor on the ground of fraud, though the bank was insolvent and failed on the next day, and though the deposit was made in reliance on representations of the president that the bank was all right, unless the officers of the bank knew of its insolvency at the time of the deposit.—*New York Breweries Company v. Higgins. (Supreme Court, General Term, First Department.) 29 N. Y. Supp. Rep. 416 (79).*

Verbal Agreements to Vary Terms of Note.—Evidence of a verbal agreement entered into by the makers and payee of a promissory note contemporaneously with or previous to its execution, whereby it was attempted to be shown that such note was not to become due according to its plain terms, but that its collectibility depended upon the happening of an event in the future, is very incompetent, and the jury should be instructed to give it no consideration.—*Van Etten v. Howell. (Supreme Court of Nebraska.) 59 N. W. Rep. 389 (77).*

Envelope Machine.

The principal object of this invention is to so improve an envelope machine as to render various of its devices or mechanisms contractible and expansible, or adjustable as to size or relative arrangement, and thereby to adapt the machine at pleasure for the production of envelopes of varying sizes and shapes. Manifestly a machine having such capability is very useful and profitable in an establishment where comparatively small orders for odd sized envelopes are to be frequently filled.

The machine is particularly characterized by the embodiment therein of a table or support for the blanks which is of itself movable or adjustable and has combined therewith adjustable gauges, a gummer picker, which is formed of removable sections and peculiarly constructed and arranged supports therefor whereby the length of the gummer may be variable at pleasure; adjustable tape-carriers; an expansible and contractible folding plunger; a contractible and expansible folding box or frame, and folder wings which are composed of removable sections and which are adjustably mounted so as to fold larger or smaller envelope blanks.

Uncultivated Bast Fibres of the United States.

BY CHARLES RICHARDS DODGE.*

(Continued.)

THE COMMON MILKWEED.

Probably the commonest and best known species of milkweed or "silkweed" growing in the United States is the *Asclepias Cornuti* (*A. Syriaca*, of Linn). Found in Canada, it grows over a wide section of our own country, and is as well known in portions of South America as in the Old World. While so widely distributed it does not seem to have been utilized for fibre beyond limited experiment. The culture of the plant is said to be attended with little difficulty, as it generally thrives on poor soil, and like the former species, is a perennial. It grows from either the roots or seed, so would be easily propagated if desirable to cultivate it.

The only portion of the plant of which practical use can be made is the bast, which furnishes quite a fine, long, glossy fibre that is strong and durable. Early authorities have given this fibre a place between flax and hemp, and the yield has been claimed to be about equal to the latter. Dr. Schaeffer, as far back as the fifties, made comparisons of the two fibres in Kentucky, and his conclusions were most favorable for the Asclepias fibre. He says:

The native fibre was taken in winter from the decayed stalks as they stood in the ground, where they grew without culture, while the hemp had not only been cultivated but treated afterward with the usual care. The fibre of the milkweed was nearly, if not quite, as strong as that of the hemp, but apparently finer and more glossy, while the quantity from a single stalk of each was nearly the same.

Among specimens of the fibre shown in the old Glover museum of this department were some fine examples from Brazil, which had been most carefully prepared, showing that the value of the plant was recognized in that country, though there are no records of its use in manufacture. According to one of the old authorities, "an early knowledge of the fibre of silkweed caused its introduction into Europe, where it has fully become a cultivated plant, while in its own country but little is known of its true value." Dr. Masters, a European authority, states that "its excellent fibre is woven into muslin, and in some parts of India is made into paper." From the Flax and Hemp Commission of 1863 the department received small pieces of Asclepias cloth mixed with one-third cotton. This, though coarse, is quite strong. From the report of Flax and Hemp Commission (p. 74) the microscopic character of this sample of fibre is given as follows:

Imperfectly cottonized, and of course unequal in staple. Some single cells, which could be drawn out, were found to resemble flax in many respects, but differing in decided markings that form long spirals, and also in the diameter of the internal cavity, which is less than that of flax and more irregular. * * * A specimen from Russia shows that the cells will not average more than three-fourths of an inch, if so much.

The fibre forms a good paper material and doubtless might be cultivated with profit for this purpose.

VEGETABLE SILK.

While the stalks yield a good fibre the pods or seed vessels produce a mass of silk-like filaments, adhering to the seed, which resemble a thistle down. This silk-like substance has frequently attracted attention as a valuable fibre material. From time to time, and in different countries, fabulous accounts have appeared regarding the discovery of a plant producing a vegetable silk that was capable of being woven into the most delicate tissues. Only recently samples of this substance were received by the department from a Bermuda correspondent, who saw in the cultivation of the plant for its "silk" a possible valuable industry. Experiments in this country have shown that the substance has no value beyond a mere upholstery material, or for use as wadding, and for stuffing pillows. Spon makes the statement that the material is used for stuffing beds in this country, and reference is made to the manufacture of fabrics from it in Russia and France. A French firm has used it by mixing 20 per cent. of the "down" with 80 per cent. of wool, the fabric being called "silver cloth." The substance could not be used alone, as the cells are so smooth that they have no felting property, and therefore will not hold together and cannot be spun. They possess little strength, and can only be considered as "down" or silky hairs, not as fibre.

OTHER SPECIES.

In the Javanese exhibit at the Chicago World's Fair two fibrous productions were shown, one a bast fibre of good color and great strength, the other a substance resembling cotton, but of a creamy color. The bast fibre was derived from the Giant Asclepias (Calotropis gigantea), a plant common to portions of India and Eastern countries. It is of considerable value in Indian pharmacy, growing wild upon arid wastes, and producing a fibre of superior quality that might be used for many purposes. It resembles flax somewhat in appearance, and is quite strong. It is not cultivated in India, though its fibre is regarded in Madras, where the plant grows wild, as the best and strongest material for bow strings and tiger traps. The plant is known under a variety of names, as Ashur in Arabic, Muddar and Ak-Muddar in Hindoo; in Madras it goes by the name of Yercum. As it thrives upon soils where nothing else will grow, needing neither culture nor water, it has been considered an advisable plant for bringing waste land under tillage and for reclaiming drifting sands.

Spon states that an acre of ground stocked with plants 4 feet apart each way will yield 10 tons of green stems and 582 pounds of fibre per acre, as prepared by native methods, which waste 25 per cent. The same authority says:

The fibre is said to possess many of the qualities of flax (Linum usitatissimum), though it is somewhat finer. Its fineness, tenacity, lustre and softness fit it for many industrial purposes. It is said to be better adapted for textiles than for cordage, and that it may readily be mixed with silk. Yet it shows a high degree of resistance to moisture. "Samples, exposed for two hours to steam at 2 atmospheres, boiled in water for 3 hours, and again steamed for 4 hours, lost only 5.47 per cent., by weight, as compared with flax, 3.50; manilla hemp, 6.07; hemp, 6.18–8.44; coir, 8.13."—[Spon.]

The mode of separating the fibre, as practiced by the natives, is exceedingly tedious, and would prevent the material from becoming an article of commerce unless some more speedy and less trifling way for preparing it could be discovered. In short, no water is used, and everything is done by hand manipulation, assisted by the teeth. Flax machinery might facilitate the matter if it was desired to cultivate extensively for fibre. As to its cultivation "it is difficult to conceive anything less productive than dry sand, yet the Muddar thrives in it, requiring no culture and no water." Dr. Wight tested samples of the fibre from Madras, where it is much employed for fish lines, and found that it bore a strain of 552 pounds when sunn hemp bore 404 pounds. Royle's experiments gave 160 for Russian hemp and 190 pounds each for Jubbulpore hemp (Crotalaria) and the Muddar or Calotropis gigantea.

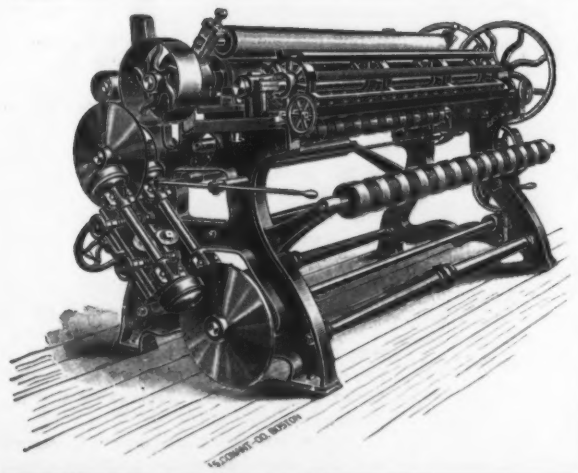
A cotton-like substance which is derived from the pods is similar to the silky hairs of the common milkweed, though coarser and less silky. The cotton-like substance shown in the Javanese exhibit was erroneously stated to have been derived from this species. The Javanese name of the fibre is Kopak, and the Kopak of Java—which is exported to Holland in commercial quantities as an upholstery material—is the product of a malvaceous plant, Eriodendron anfractuosum. The cottony fibre of Calotropis gigantea is said to have been manufactured into shawls and handkerchiefs, but I cannot think it possesses sufficient strength to be spun alone. I am aware, however, that a soft kind of cloth has been made from the "down" of this tree by mixing with cotton. It has also been used in the manufacture of paper.

There are several other species of plants belonging to the Asclepidaceæ that are known to the vegetable economy as fibre producers, and found chiefly in the Old World. Among these is the Marsdenia tenacissima, Rajmahl Bowstring Creeper, the plant producing the jeetee fibre of India. There is no sample of the fibre in the museum, but as it is often referred to and is well known, it will be proper to mention it. It grows in the Rajmahl hills of India in dry and barren places, and the fibres of the bark are employed for making bowstrings by the mountaineers. "The fibres are not only beautiful in appearance, but strong and durable." In Dr. Roxburgh's tests of twine made from jeetee, he found that in the dry and wet states it bore a strain of 248 and 343 pounds, when hemp in the same state bore 158 and 190 pounds. More recent tests, however, place it below hemp in strength, but above it in elasticity. The fibre is much used for making nets, and is not liable to injury by being kept in water.

(To be Continued.)

*Report to U. S. Department of Agriculture.

A new granulated paper for use in palinotype and photographic processes and for lithographic and photo-lithographic work has been patented in England by Carl Schaufflen. The graining is in the form of depressions instead of relief, the grains being arranged at an exactly uniform distance apart, their number to the square centimetre varying according to the fineness of the paper. The grain is produced in two ways: by calender rolls having corresponding projections and depressions, and by plates passed between rollers.



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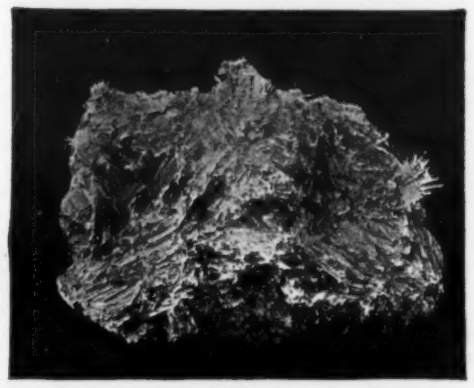

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WE HAVE SOLD A FEW SCREENS, AS FOLLOWS:

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High Falls Sulphite Pulp Co.	Potsdam, N. Y.	10	..
The Empire Pulp Co.	Black River, N. Y.	1	..
Globe Paper Co.	Brownville, N. Y.	2	..
Union Pulp Co.	Carthage, N. Y.	1	..
Frontenac Paper Co.	Dexter, N. Y.	1	..
Leonard & Gilmore	Dexter, N. Y.	1	..
Outterson Paper Co.	Brownville, N. Y.	3	3
Oswego Falls Paper Co.	Fulton, N. Y.	4	3
Gouverneur Wood Pulp Co.	Gouverneur, N. Y.	4	4
Knowlton Paper Co.	Watertown, N. Y.	1	..
Ontario Paper Co.	Watertown, N. Y.	2	2
Herkimer Paper Co.	Lyons Falls, N. Y.	4	3
G. H. P. Gould	Port Leyden, N. Y.	1	..
Gould Paper Co.	Port Leyden, N. Y.	2	2
Racquette River Pulp Co.	Colton, N. Y.	3	..
Sparks Manufacturing Co.	Hamburg, N. J.	1	..
Charles Callender	Glendale, Mass	2	2
Merrimac Paper Co.	Lawrence, Mass	2	2
Connecticut Paper Co.	Holyoke, Mass.	1	..
Carew Manufacturing Co.	South Hadley Falls, Mass.	2	2
Rice, Barton & Fales	Worcester, Mass.	3	2
Eaton, Dikeman & Co.	Lee, Mass.	1	..
Fall Mountain Paper Co.	Bellows Falls, Vt.	12	7
Wyman, Flint & Sons	Bellows Falls, Vt.	3	2
National Metal Edge Box Co.	Readesboro, Vt.	1	..
Glen Manufacturing Co.	Berlin Falls, N. H.	6	3
Wilder & Co.	Ashland, N. H.	1	..
Umbagog Pulp Co.	Livermore Falls, Me.	2	..
Bangor Paper Co.	Bangor, Me.	4	..
Jay Paper Co.	Jay, Me.	1	..
White & Wells.	Waterbury, Conn.	2	2
St. Cloud Paper Co.	St. Cloud, Minn.	1	..
Columbia Paper Co.	Buena Vista, Va.	2	..
Anderson Paper Co.	Anderson, Ind.	3	2
Kaukauna Paper Co.	Kaukauna, Wis.	1	..
Willamette Pulp and Paper Co.	Oregon City, Ore.	9	4
California Paper Co.	Agnews, Cal.	1	..
Tennessee Pulp Co.	Memphis, Tenn.	1	..
Estate of Richard Carter	Glendale, N. Y.	1	..
Charles Wackerhagen	Canaan Four Corners, N. Y.	1	..
Smeallie, Phillips & Co.	Amsterdam, N. Y.	1	..
O. E. Martin.	Norwood, N. Y.	1	..
Jefferson Paper Co.	Black River, N. Y.	2	2
St. Lawrence Paper Co.	Dexter, N. Y.	3	3
Payne & Blinn	Chatham, N. Y.	1	..
M. M. Pillsbury	Napanoch, N. Y.	1	..
Victoria Paper Co.	Fulton, N. Y.	2	2
Philip McGuire	Forestport, N. Y.	1	..
Hartland Paper Co.	Middleport, N. Y.	1	..
Standard Pulp Co.	Jennie's Falls, N. Y.	3	..
Bacon Paper Co.	Lawrence, Mass.	1	..
Watertown Paper Co.	Watertown, N. Y.	3	3
Alpena Sulphite Pulp Co.	Alpena, Mich.	4	2
Hollingsworth & Whitney	Winslow, Me.	2	2
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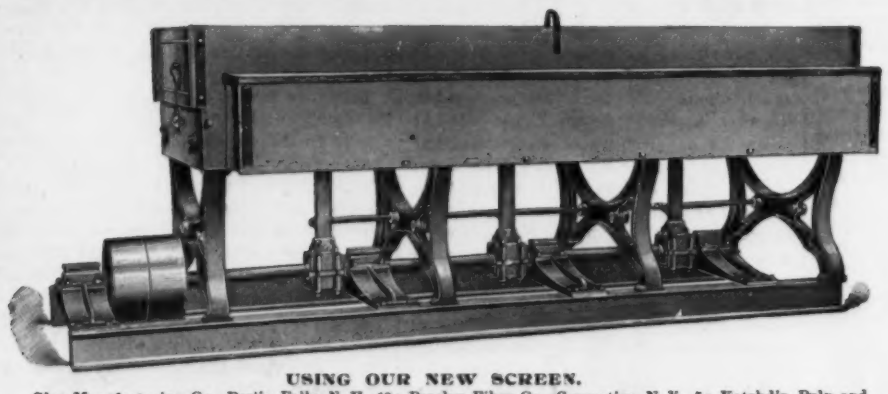

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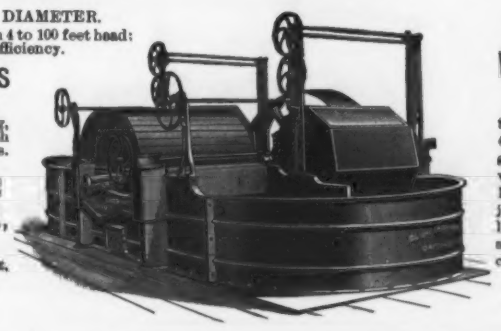

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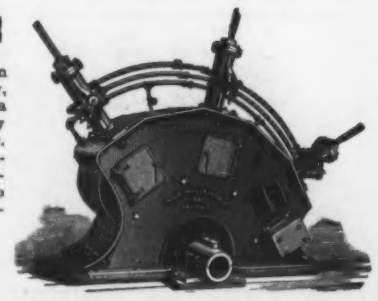

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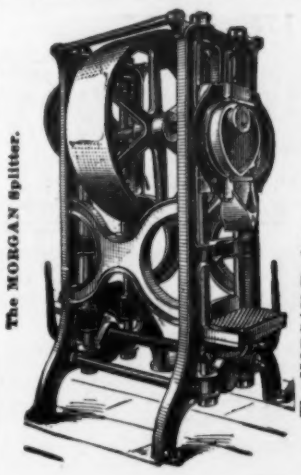

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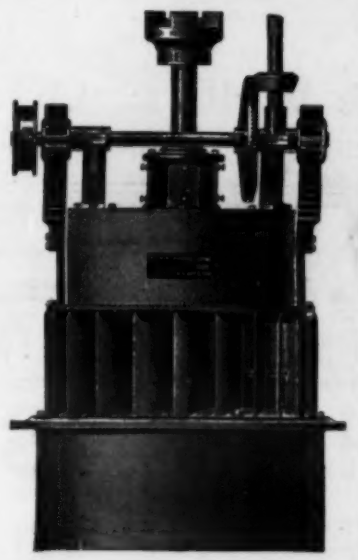

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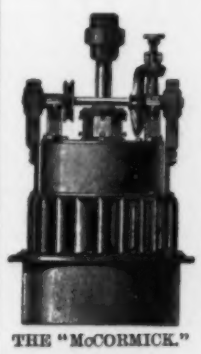

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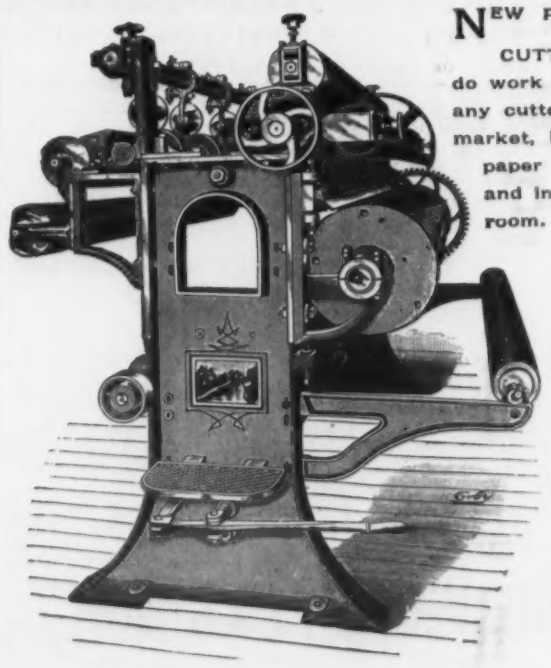

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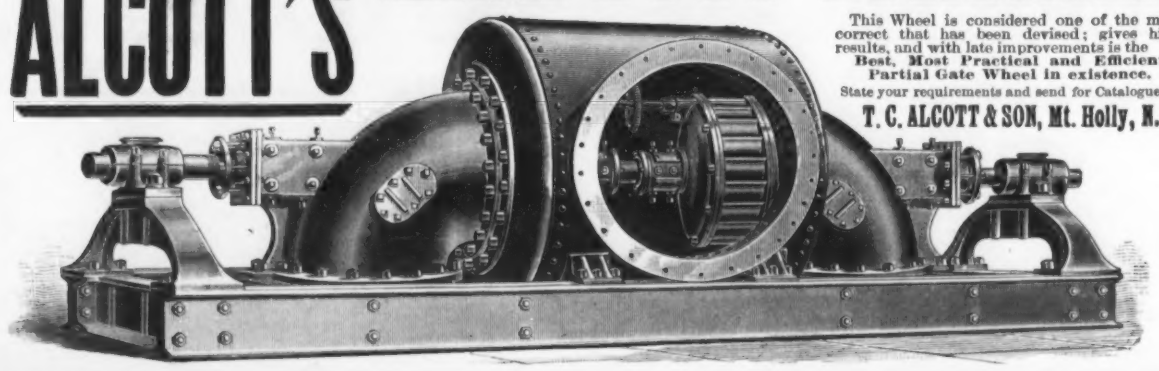

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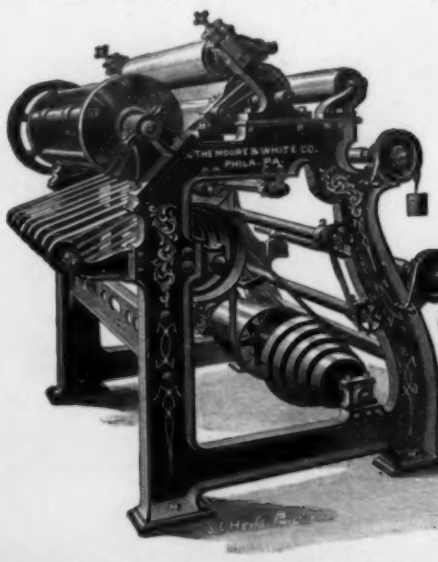

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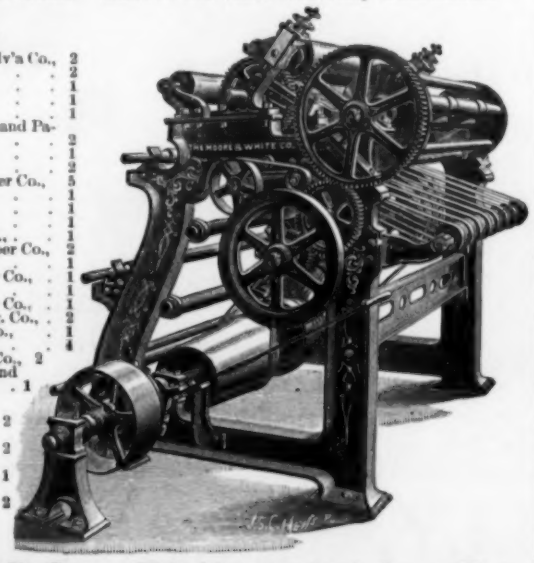

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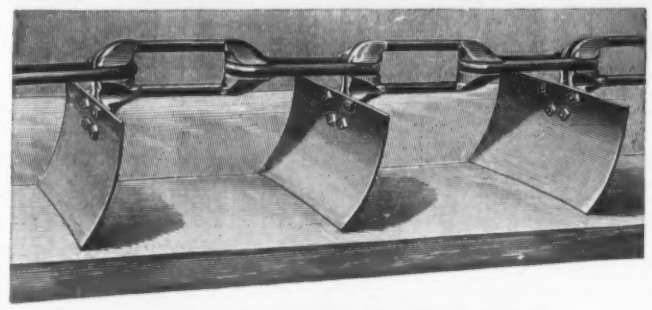

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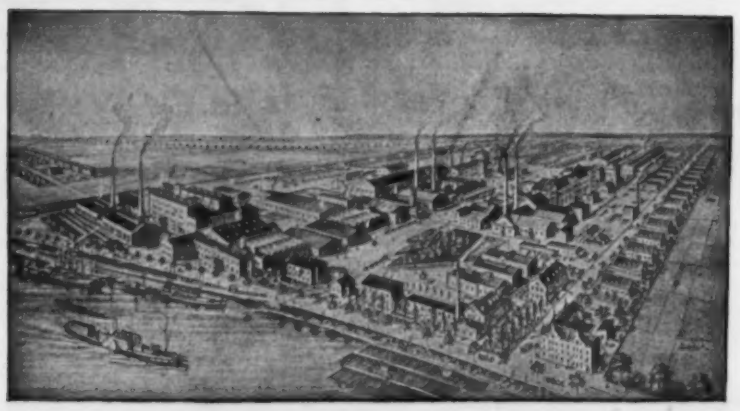

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Manufacture of Straw Cellulose.*

By James Beveridge.

(Continued.)

III.—YIELD.

It has always been the aim of manufacturers to obtain the highest yield of cellulose from unit weight of straw, and to this end various modifications of the soda process have been suggested and worked on a manufacturing scale. A process with this intent was brought out some years ago by Leunig and worked by an English company, but the results were very indifferent. Caustic soda was used to remove the incrusting organic and mineral matters surrounding the fibres substantially in the manner above described, but, instead of bleaching with hypochlorites, chlorine gas was employed. This, as is generally known, is a costly and anything but an easy process to carry on economically and free from nuisance, if not actual danger, and it is not surprising that the Leunig process proved unsatisfactory from a commercial point of view.

From what I have previously stated it might be inferred that a sulphite process for the treatment of straw would prove of value, inasmuch as by it the maximum yield of pulp would be obtained for the reasons already given—namely, that cellulose is less soluble in solutions of bisulphites of lime, soda or magnesia than those of caustic soda. Notwithstanding that this is substantially true there are yet serious defects attached to the quality of the product which render it practically worthless for use in the manufacture of papers of a high quality. This arises from the fact that the silica in the straw remains untouched by the bisulphite solutions, and appears in the cellulose in a very objectionable form. When such cellulose is converted into paper, the silica appears upon the surface of the sheet as small shining scales. It is also obvious that there is only one available method of cheaply removing this silica, which consists in dissolving it out with a weak solution of caustic soda. My experiments in this direction have proved that this can be done, and that the cellulose produced by this dual treatment is of first-class quality. The yield, however, remained substantially the same as that obtained by digesting the straw in caustic soda alone. In this, as in the Leunig process, all organic substances readily soluble in weak caustic solutions, are removed.

Some very interesting figures on the question of yield, which I here reproduce, were given in the *Papier Zeitung* some few years ago by Roth. I understand them to be the results obtained in actual manufacture, and as such are very instructive to the pulp and paper maker. They clearly show that the yield from unit weight of straw varies inversely with the quantity of caustic soda used for digesting, and that the amount of bleaching powder required to bleach the pulp varies directly with the yield. Assuming the temperature (or pressure), the time used for digestion, and the quality of the straw with respect to its percentage of cellulose to be kept practically constant, I have found by a long series of experimental trials that the above conclusions are strictly correct.

These manufacturing yields, as given by Roth, seem to indicate that it is possible to obtain 50 per cent. of bleached cellulose from straw, but whether the product corresponded in quality to what is found in the market as straw pulp seems to be very doubtful. The fact that 7 cwt. of bleaching powder were required to bleach one ton of it plainly indicates that it was of low quality. It is of course possible to treat straw with weak caustic solutions to obtain a high yield, but this product cannot be looked upon as "straw pulp" of ordinary quality.

In practice, the actual yield seldom exceeds 40 per cent. In one pulp mill with which I have been connected, working a mixture of oat and wheat straw, with occasionally a small parcel of rye and barley, all grown in Holland, the yield of bleached cellulose containing 10 per cent. of moisture fluctuated over a long period between 40 and 41 per cent.

The bleaching powder required to bleach this air dry pulp varied from 18 to 20 per cent. These results closely correspond to those given by Roth in the Austrian factory.

Lately the so-called "sulphate process" has been applied in a German factory, and as the digesting fluid consists largely of sulphide of sodium, which, as might be inferred from its properties, has a less solvent action on the cellulose than caustic, it is very probable that the yield obtained in this process exceeds that of the caustic process pure and simple. I am, however, unable to state definitely whether this is so or not, or what the yield actually is.

Passing now from the question of yield, I come to another of great importance, namely, the influence of the quantity of silica in straws on the loss of soda, and a consideration of the methods for mitigating this loss. It is almost unnecessary for me to remind you that the composition and quantity of the ash found in straws varies very greatly. The most complete analysis of the ashes of straws, which I have been able to find, are those published by Wolff ("Ashen Analysen"). The following table embraces his average results:

Composition of the Ashes of Straws—Wolff's "Ashen Analysen."

	Total Miner'l Matter in Straw.	Percentage Composition of the Ash.								
		K_2O	Na_2O	CaO	MgO	Fe_2O_3	P_2O_5	SO_3	SiO_2	Cl
Barley straw, avge. of 4 analyses.	8.10	23.75	1.92	7.55	2.62	2.19	3.94	3.91	51.43	3.75
Oat " " 8 "	7.77	26.37	3.99	4.23	2.53	1.79	2.66	3.06	35.68	7.99
Rye " " 3 "	4.32	26.98	0.74	11.10	4.45	3.19	8.97	5.57	36.86	3.68
Wheat straw, one analysis.....	3.25	12.16	1.00	6.82	4.00	1.02	3.20	5.78	65.34	0.60

While the straw is being boiled substantially, the whole of the silica passes into solution as silicate of soda. The alkali thus combined is practically lost to the pulp maker, because it is rendered inactive for the process of digestion. The quantity of alkali thus rendered useless will vary of course with the amount of silica contained in that quantity of straw which will produce one ton of air dry bleached cellulose on the quantity of potash rendered soluble, and also on the chemical constitution of the silicate. There being an excess of caustic soda always present, I have assumed the silicate to be a normal one, having the formula Na_2SiO_3. Assuming this to be correct, I have calculated, as shown in Table II., first, the quantity of straw required to produce one ton of air dry cellulose; second the amount of silica contained in this quantity of straw; and then, finally, the quantity of soda, reckoned as 60 per cent. alkali (Na_2O), which would combine with this silica. Going a step farther, by way of example, and assuming 21 pounds of 60 per cent. caustic to be the amount required to digest 1 cwt. of the Dutch wheat straw (Ijpolden) above given, the total alkali (60 per cent.) used to produce one ton of cellulose is 10.92 cwt., and of this 4.39 cwt., or 42 per cent., would be neutralized by this silica.*

It is this loss which increases the cost of soda so enormously in straw cellulose works. Unless the silicate of soda in the waste lyes or the recovered ash can be decomposed in some practical or economical way, or the recovered ash sold as such, the present highly efficient systems of soda recovery by multiple evaporation, by which 80 per cent. of the soda can be easily recovered, are of little value to the straw pulp maker. Indeed, in most cases where the silica approaches in quantity anything like that shown in the table, the recovered ash is of little value for further use in digesting. For reasons formerly stated, it is manifest that the most economical course to follow is to select those straws only for the manufacture, which by chemical test are shown to contain the least quantity of silica.

There are several methods, alike in principle, of reconverting this silicate of soda into available caustic alkali. The most simple way consists in adding bicarbonate of soda to the solution of the recovered ash, whereby the silicate is decomposed, normal carbonate of soda being formed with the separation of free silica. The same decomposition can be brought about by pumping gaseous carbonic acid through the liquor, but as this gas is not always available, and the cost of pumping is a serious item, and as the silica thus separated is in a very gelatinous state, this system is not practicable. Messrs. Sutherland and Kynaston, who took out a patent some years ago for the use of bicarbonate, claim to obtain the silica as a heavy or granular precipitate, in which state it can be separated from the carbonate of soda liquor with comparative ease. The separation of the silica is one of the great difficulties of this process. The use of bicarbonate serves the additional purpose of replacing the alkali which is invariably mechanically lost, but if the quantity of silica and the percentage amount of soda recovered are both great, it can be shown by a simple calculation that the amount of bicarbonate required to effect the decomposition abnormally increases the volume of the alkali-liquors in circulation; that is to say, more bicarbonate is used than corresponds to the soda mechanically lost.

The next most important constituent of the ashes of straws that calls for particular attention is potash. While silica is considered as an impurity and of no value, the potash, on the other hand, might be utilized and turned to account. This problem is, however, as difficult to solve as that of getting rid of the silica in the waste soda lyes. If we refer to the table of composition of the ashes of straws, it will be found that the potash is very considerable in quantity, that in fact it ranks next to silica in this particular. It appears highest in the oat straw, rye coming next, then barley, and finally wheat. The oat straw contains more potash than silica, indeed 2.98 per cent. of its weight. Assuming, as before, that 49 cwt. of this straw will yield a ton of bleached cellulose, the amount of potash which passes into solution for this quantity is 1.46 cwt., which represents nearly 14 cwt. of potash alum. The above barley straw would yield a very similar amount, while the rye and the wheat would yield proportionally smaller quantities.

Some years ago I made several experiments with a view to recover the potash if possible in a useful state. The separation of it from the soda is very difficult, and so far as I am aware can only be accomplished in an imperfect way by crystallization, the solubility of carbonate of potash being much greater than that of the corresponding soda salt. Of course it is practically impossible to get the potash by itself in a comparatively pure state in this way, and commercially it is too much contaminated with soda to be of much value, excepting probably in the artificial manure trade. I have, however, attempted to obtain it in the form of an alum by neutralizing the alkalies in the mother liquors, after crystallization, with sulphuric acid, and then adding sulphate of alumina and further concentrating and crystallizing, obtaining a crop of crystals. These, however, consisted largely of sulphate of soda (Glauber's salts), but undoubtedly contained crystals of potash alum.

This method, the principle of which was applied by Newlands many years ago to the recovery of potash from sugar solutions, would be costly to carry out in practice, as it involves, first, the separation of the silica from the recovered ash; second, the separation of the bulk of the soda from the potash; and, finally, the purification of the alum. On the other hand, the advantages of being able to purify the waste lyes, together with the value of the potash recovered would, I dare say, allow of considerable expenditure in dealing with the problem.

(To be continued.)

*From *Journal of the Society of Chemical Industry.*

* An allowance of course must be made for the amount of potash present in the straw as a silicate.

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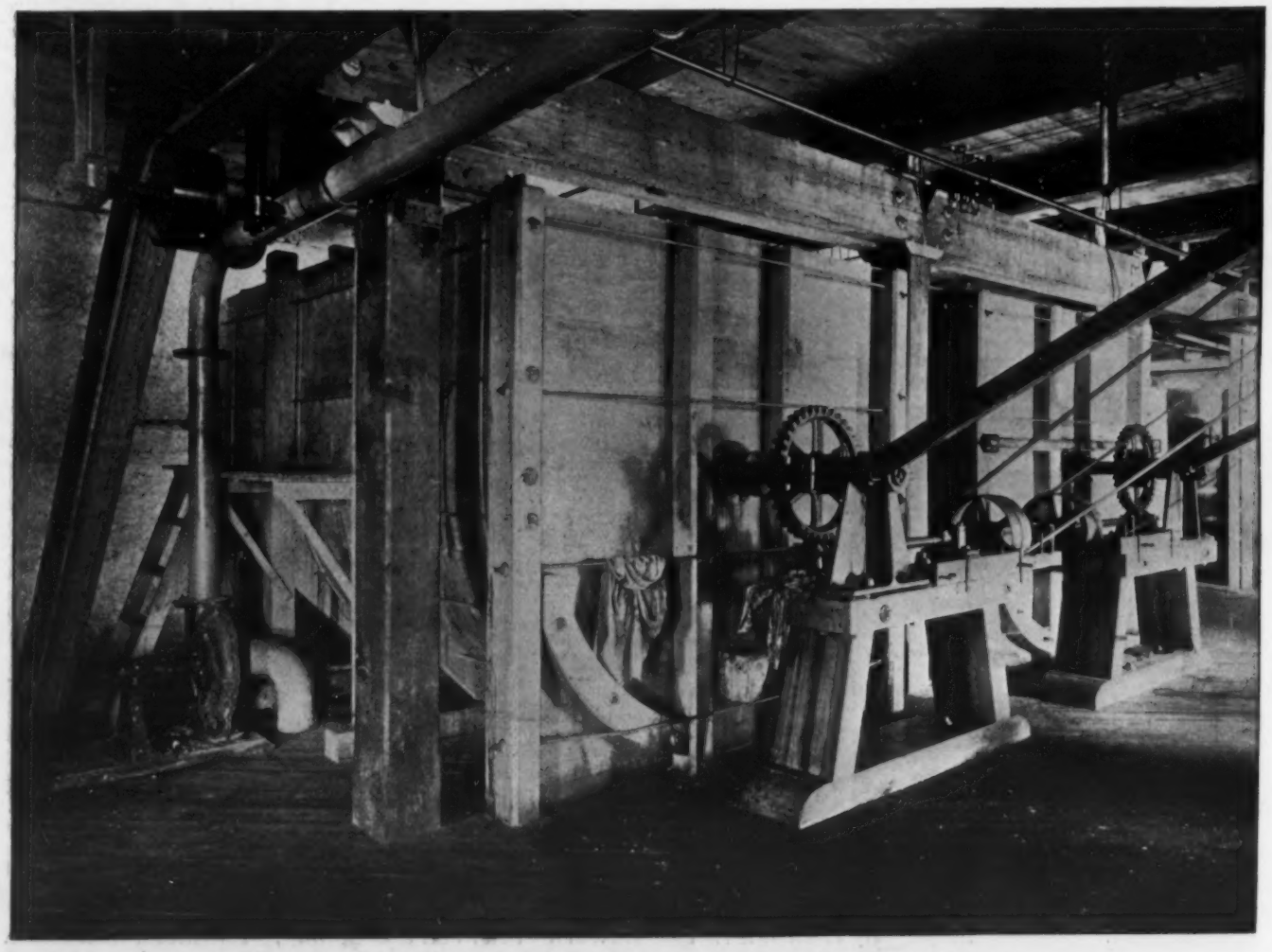

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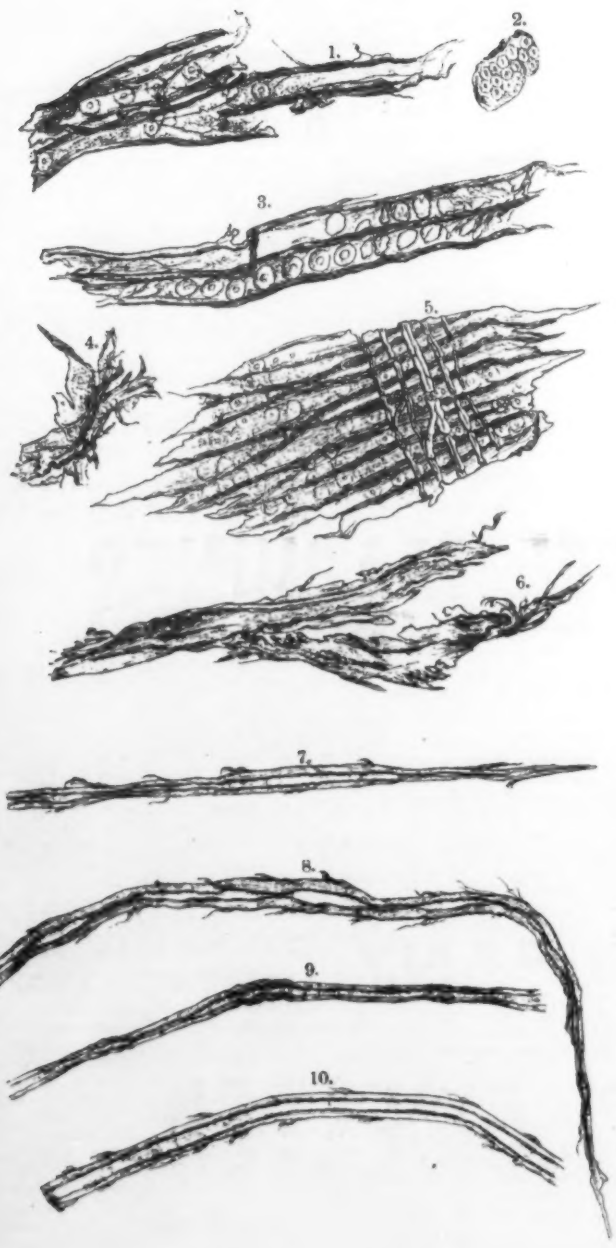

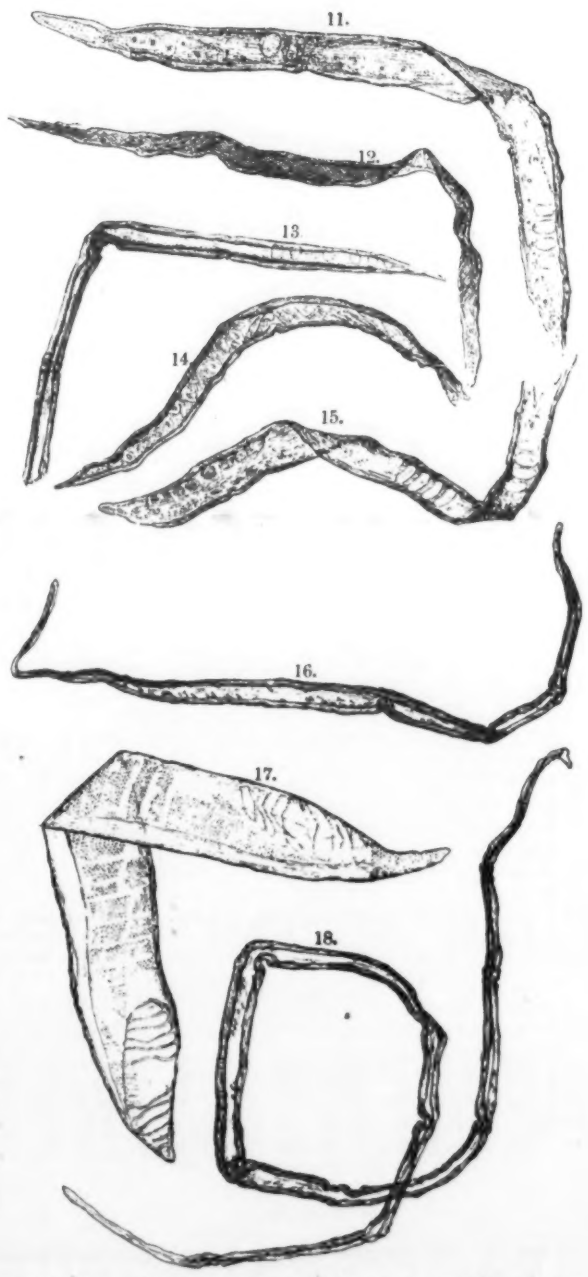

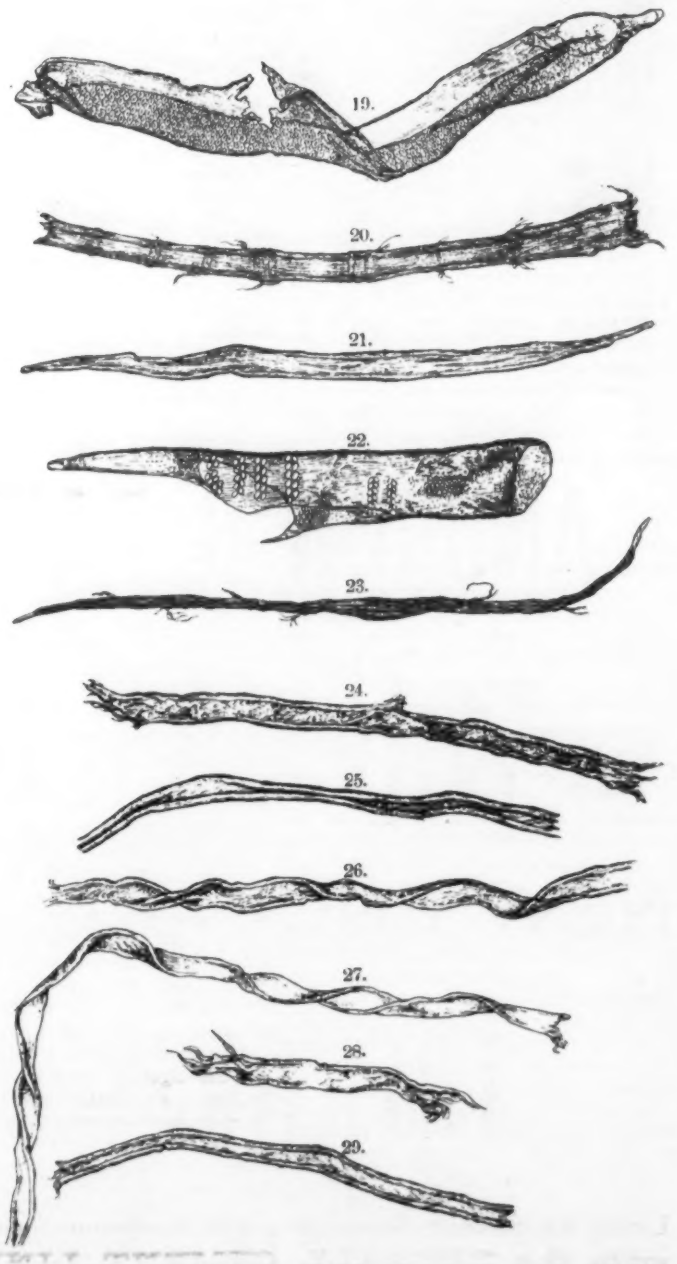

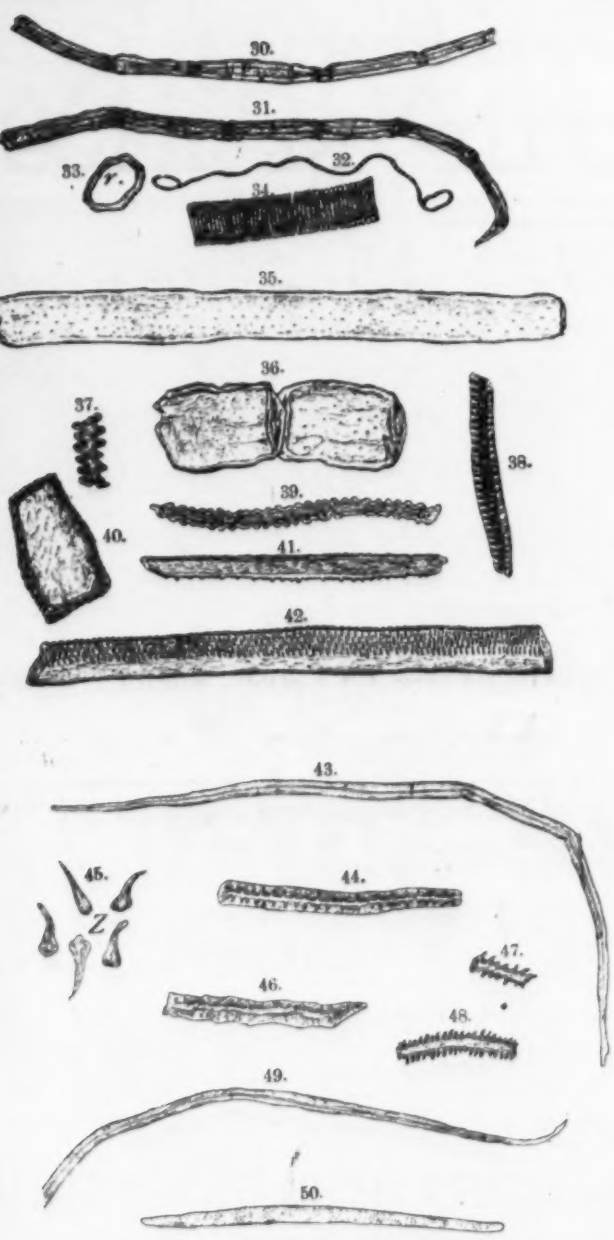

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(W. HERZBERG.)

EXPLANATION OF PLATE.

1- 6—Ground wood (spruce).

7-10—Jute.

11-15—Spruce.

16-18—Birch; 17, a vessel; 16 and 18, wood cells.

19-23—Poplar; 19 and 22, vessels; 20, 21 and 23, wood cells.

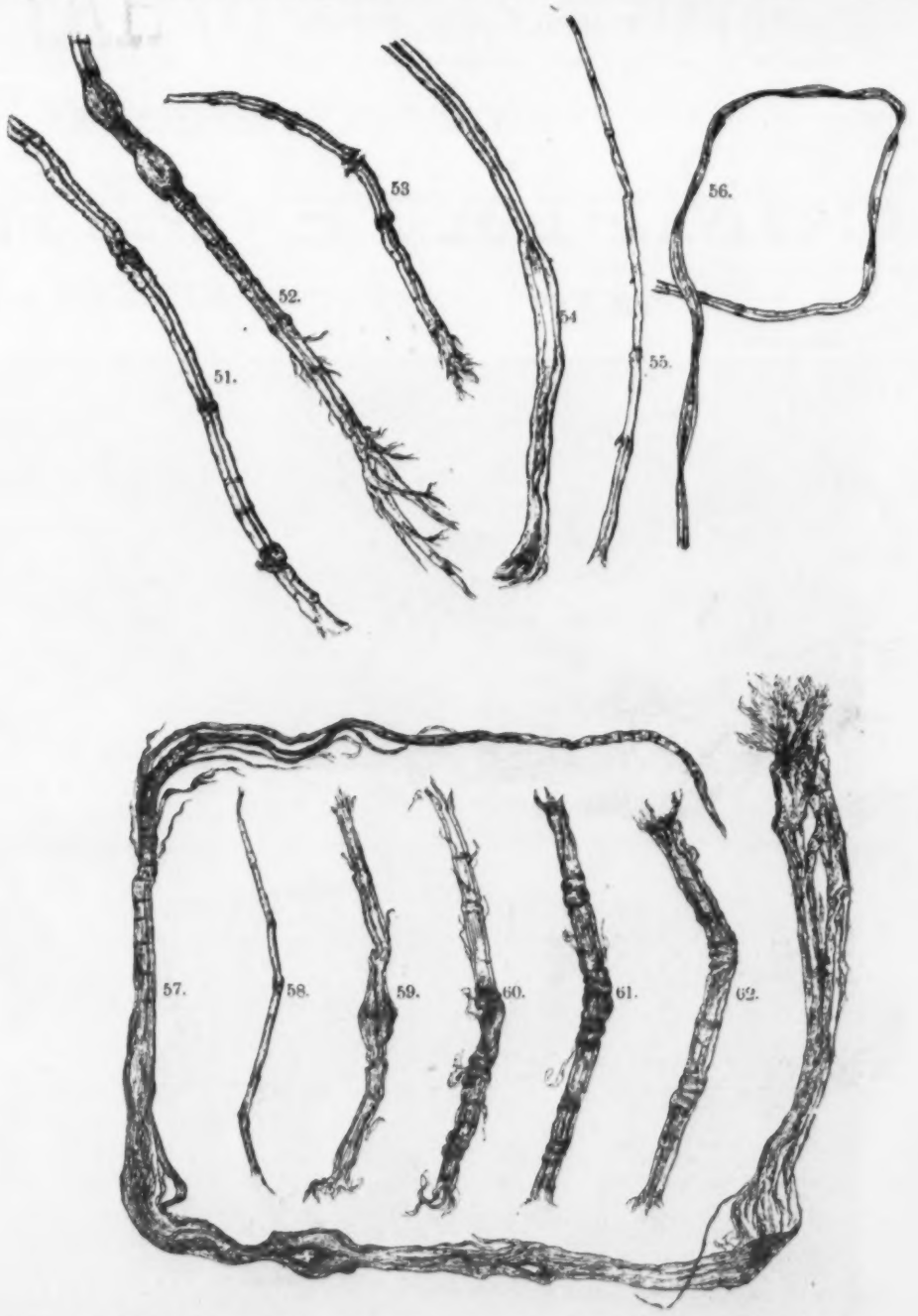
24-29—Cotton.

30-42—Straw; 30 and 31, bast cells; 32 and 34, spiral vessels; 33 (r.), ring from spiral vessel; 35 and 36, parenchyma cells; 37, 39 and 41, epidermal cells; 38 and 40, sclerenchyma cells.

43-50—Esparto; 43 and 49, bast cells; 44 and 46, sclerenchyma cells; 45 (z), "pear shaped cells;" 47 and 48, epidermal cells; 50, a vessel.

51-56—Linen.

57-62—Hemp.



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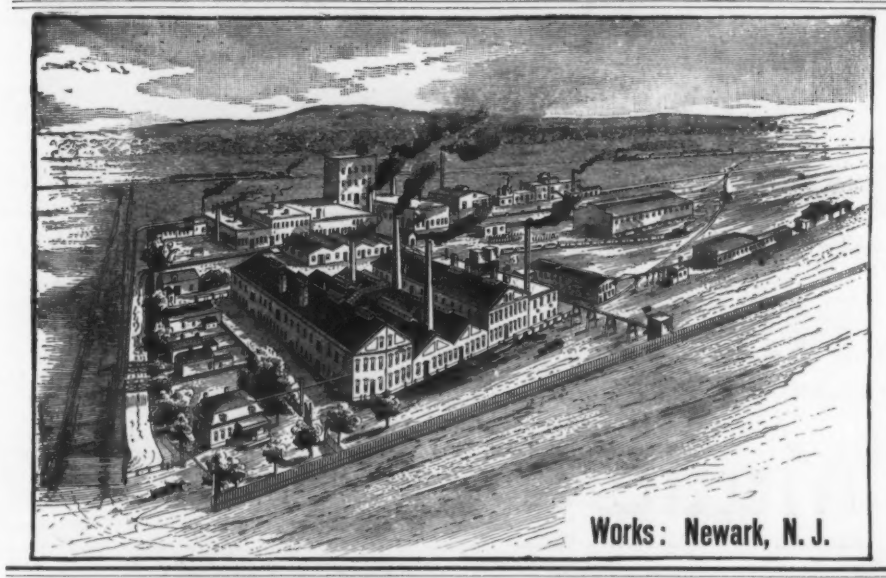
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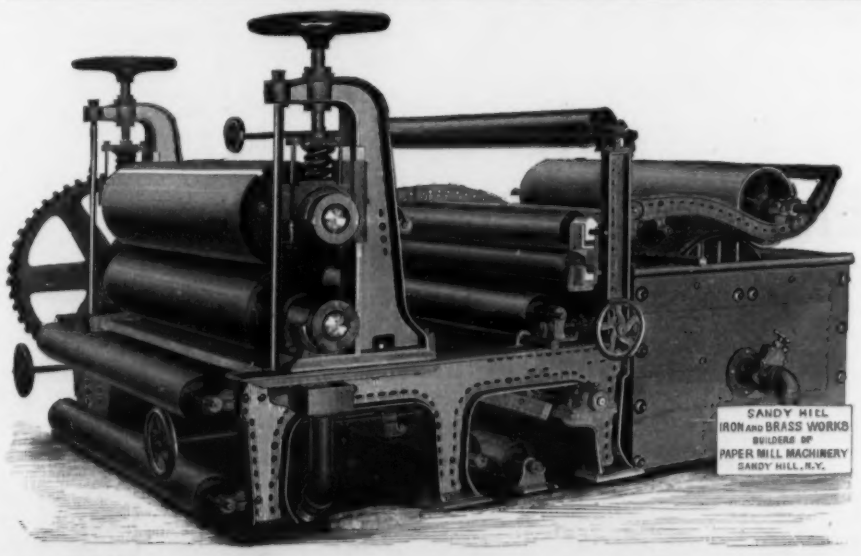

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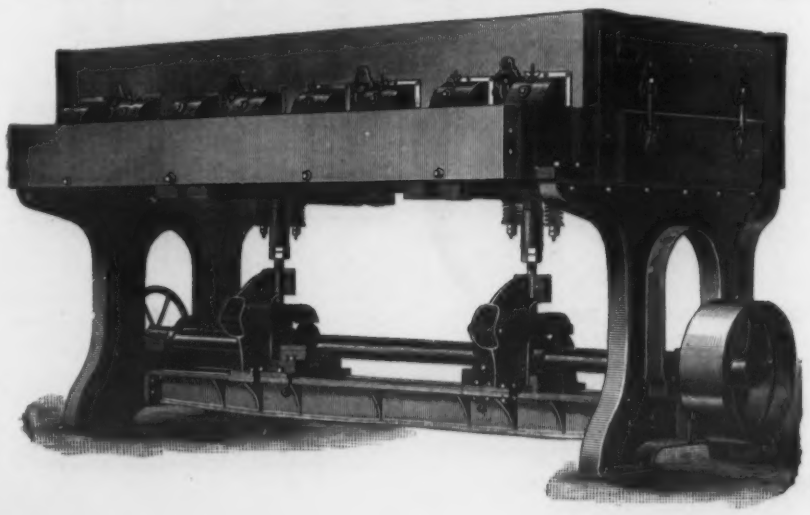

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As to the film of metal deposited in the first instance, it disappears in some obscure way, forming oxides which mingle with the magnetic oxide or volatilize, according to the nature of the metal of which they are composed. Mr. Bertrand had then to find the best metal, and the best method for depositing it on the article to be coated, and he has found that bronze—a mixture of copper and tin—gives, from a practical point of view, every satisfaction. For depositing this bronze on the wrought iron and cast iron, Mr. Bertrand uses electricity or wet baths, and uses sulphophenolic acid.

The following is the method adopted in the Bertrand manufactory for oxidation: The article is cleansed (the cleansing is not indispensable), then dipped for a few moments in a bath containing a solution of sulphophenolate of copper and tin. The coating of bronze being formed, the article is immediately washed with cold water and dried with sawdust. The article dried is put into a furnace. Oxide forms, and at the end of 15 to 30 minutes (according to the nature of the articles) the article is taken out sufficiently oxidized. The coating produced varies from four to eight thousandths of an inch in thickness.

Mr. Bertrand uses electricity to ascertain if the coating is of sufficient and uniform thickness, and in doing so he makes use of bells. If, in putting the two wires in contact with the oxidized article, the bells ring, the current passes—the oxidation is insufficient; if it remains silent the oxide formed is of sufficient practical thickness, because it prevents the electric current from passing. To obtain tinning on iron, salts of tin are dissolved in a mixture of water and sulphophenolic acid at the rate of 1 per cent. of tin salt and 5 per cent. of sulphophenolic acid. In this mixture the article, which is previously cleaned, is dipped, and is at once covered with an adherent coating of tin, and afterward by the means of rotating brushes in wire and cloth the coating of tin is polished, and a result is obtained which is both effective and cheap.

For enameling iron the direct process is stated to be dangerous to the operator and impossible in the case of large articles. In the Bertrand enameling the article is first coated with magnetic oxide, then dipped in borosilicates of lead, colored by metallic oxides, in which is added a little pipe clay in order to give rather more body. The article thus covered cold, by dipping or with brushes, is put into the furnace; the enamel adheres and vitrifies at the usual furnace temperatures used by enamelers. By putting a coating of colored enamel with a brush on a first coat simply plain it is possible to make any decorations desired, which may be burned in at one operation for outdoor vases, &c. These results, due to the first oxidation with magnetic oxide, are remarkable as much for the color as for the tenacity of the enamel and its resistance to rough usage.

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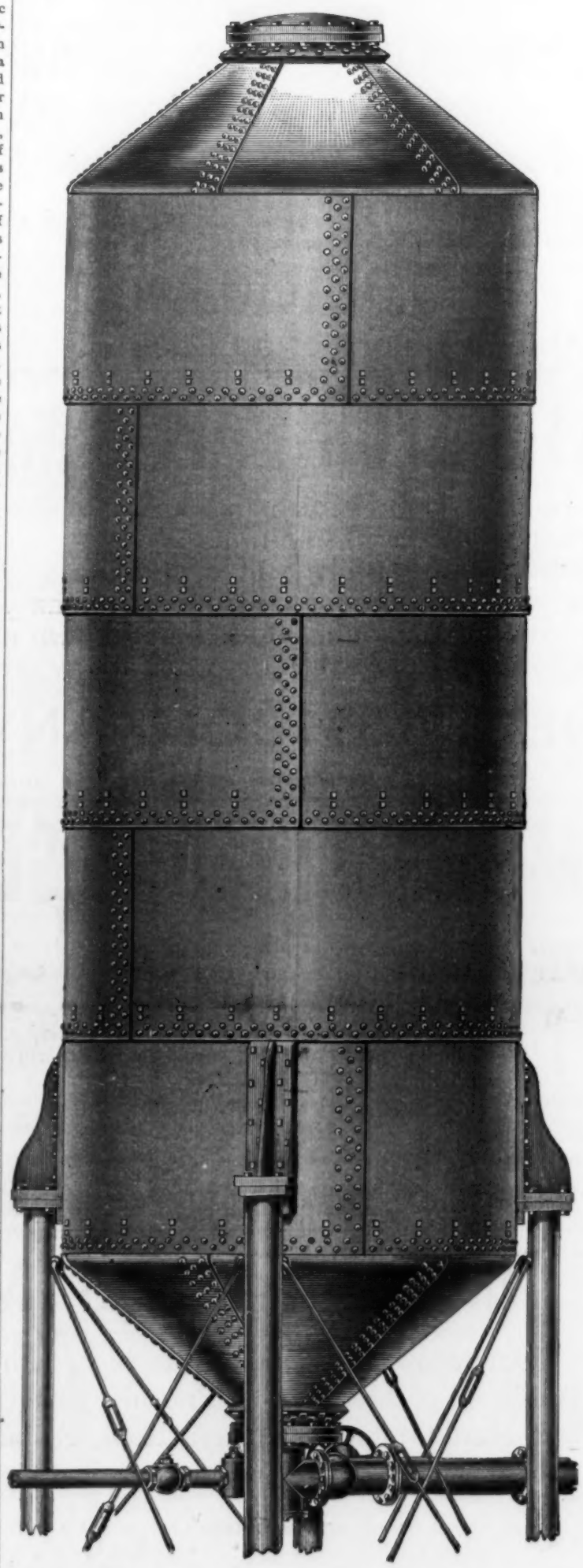

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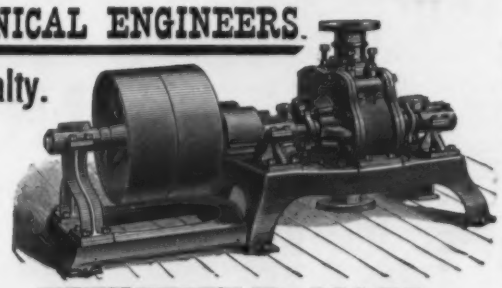

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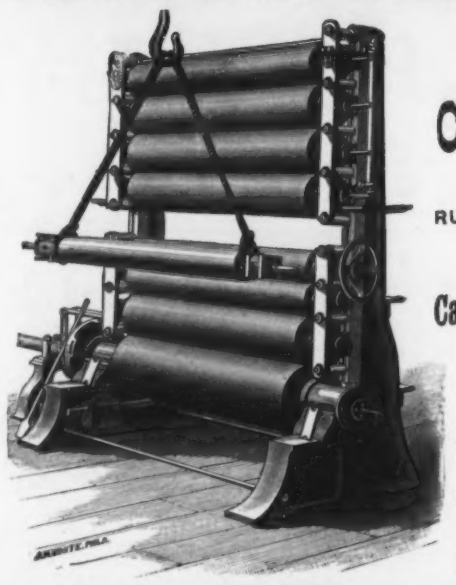

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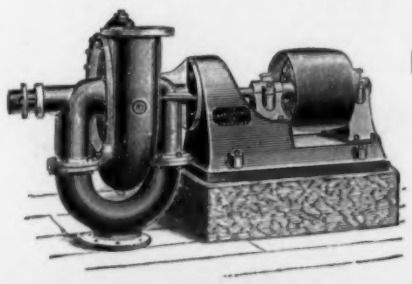

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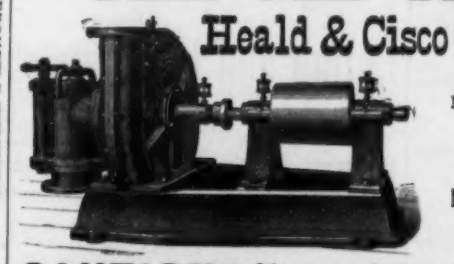

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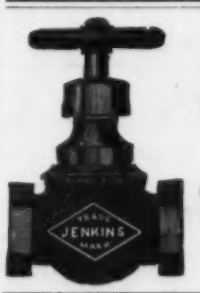

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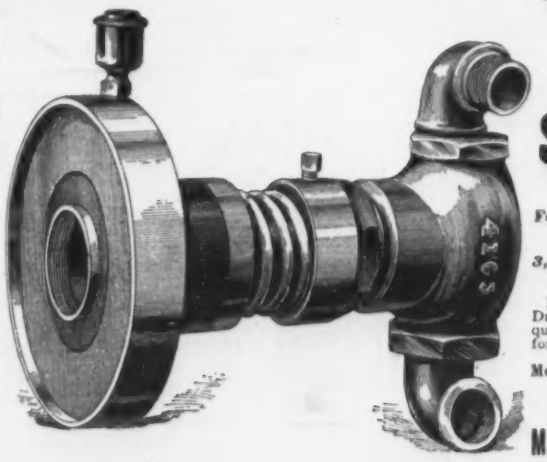

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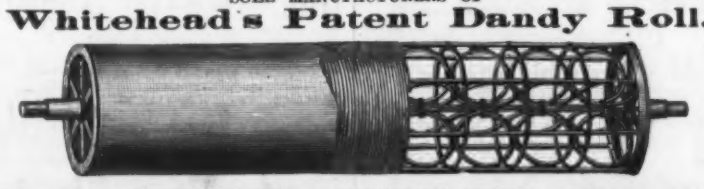

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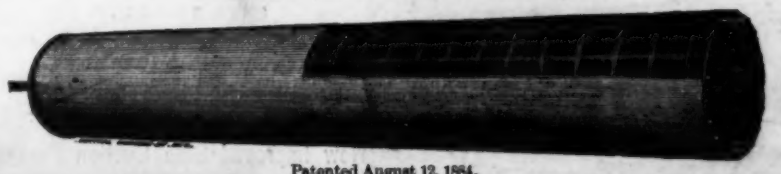

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